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NOTICES—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Other communications relating to advertisements or general matters should be addressed to the Manager.

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A Real Traders' Association

THE unanimous decision come to by a representative conference in Manchester on Wednesday to establish a British Chemical and Dyestuffs Traders' Association will provide the trading section of these closely allied industries for the first time with a really representative body. Already at this early stage of its development the organisation is supported by the leading firms in the trade, and it constitutes a nucleus which is bound to attract additional adherents until it becomes completely representative of the whole trading community. This remarkable result, achieved in the course of only a few months, testifies conclusively to the general and urgent sense of the need of such a body, and if the energy, unity, and good business qualities, which account for the success hitherto attained, continue to be steadily applied to the ends in view, another six months should see the Association firmly established and in full operation. The preliminary proceedings have throughout been marked by a notably loyal and harmonious spirit, and the conclusive decision

taken in Manchester on Wednesday was reached with a unity of feeling and purpose which makes complete success assured.

It needs to be emphasised that the new body is essentially a traders' association, and that its central purpose will be to protect and promote the traders' interests. The needs of manufacturers in this respect are already provided for, as are also those of the scientific and technical sections, and now a link which has hitherto been lacking will make the organisation of the whole trade complete. Traders will thus be placed in a position of equality with the other organised branches of the chemical and dyestuffs industries, and will be able even more efficiently than in the past to discharge their essential function of distribution and linking up of the producer with the consumer.

It has become rather a habit to refer disdainfully to the merchant as "the middleman" who exists on the labours of others and does little else. This is a false and uninstructed view that needs to be rigorously put down, and for this purpose Manchester was, perhaps, the most suitable centre in the kingdom that could have been chosen, for it is a city of merchant princes, whose wonderful commercial organisation maintains and regulates the constant flow of trade between those who produce and those who consume. This is in itself a service of the first importance to the nation, for the function of the merchant, when efficiently exercised, is to keep manufacture and consumption in regular movement, and without the delicate network of trade connections by which this is accomplished, our import and export trade would be seriously imperilled, if, indeed, it did not break down. But the merchant is something more than a connecting link, important though he is in this respect. He is an active promoter of productive industry itself, for he not only encourages but often actually finances and organises production in addition to providing means for disposing of the finished output. He is, in fact, an indispensable part of the machinery of national commerce, and if the public are to realise his importance he himself must first realise it, and take steps by organisation for securing justice and recognition from all the other interests which he serves.

This is the foundation principle on which the new association rests and the central aim it has to keep in view, but there are other activities within its scope almost without limit. As the chairman pointed out in his admirable review of the situation, the governmental and political aspects of trade are now recognised to a larger extent than ever before, and if official action is really to help and not hinder the growth of national trade it must be instructed by the best trade opinion, and be always in the closest possible sympathy with the trade point of view. The plain truth is that the organisation already in existence, though it has fulfilled

useful and praiseworthy functions, is admittedly not fully representative and the situation must accordingly be revised and brought into correspondence with the actual facts and needs. The Board of Trade and other interested departments cannot adequately deal with the traders' position without dealing with the new association as its representative body, and we have no doubt, as the chairman hinted yesterday, that they will welcome its co-operation and avail themselves of its advice so as to bring the interests of the trade and the departmental regulations concerning them into complete agreement. To neglect or to decline to do this would be inviting inefficiency in their own work and asking for trouble.

The chemical trading community may, therefore, be warmly congratulated on the important step it took at the Manchester conference, and those active members of it who are responsible for the success of the movement are entitled both to congratulation and to gratitude for the good and effective service they have rendered to the merchant class. In Mr. Reynolds, the working head of the organisation, the new body is singularly fortunate. He is one of the recognised personalities among chemical traders, and his tact, moderation, and wide business experience will be a great asset in the early stages of the association's career.

Chemistry and the Paper Problem

THE problem of an adequate supply of paper, particularly for newspaper, literary and commercial purposes, is fast becoming not merely a national but an international problem. Practically every paper-using nation is seriously under-supplied, and there is a world market threatened with partial starvation, willing to absorb unlimited quantities, and prepared to pay prices which before the war would have been considered ruinous. There is here, then, an almost unlimited field for the extension of a world industry if only research and experiment can discover for us new sources of raw material. If it is the chemist, associated with the engineer, who has hitherto furnished us with cheap paper by the manufacture of wood pulp, it is to the chemist again we must look for the solution of our new difficulties. The United States is already turning its thoughts in this direction, and the immediate appropriation is suggested of £50,000 for research with the object of discovering a substitute for wood pulp.

A reference to any fairly old encyclopædia would probably describe paper as a substance made from rags and similar textile material. But those days are long past, and the raw materials of the paper trade come mainly from the forests of the world. These have been made available by mechanical and chemical processes, and vast as the supplies are the demand is rapidly overtaking them, and it is estimated that in another 25 years the great forests of the temperate zones may have disappeared. If the trouble were purely prospective we might comfortably leave the next generation to look after itself, but it is actual to-day and it is becoming increasingly urgent. The main cause is that paper production, or rather wood pulp production, has been left to nations which have

specialised in it—Scandinavia, Finland, Canada, and a few others—and the sudden demand following upon the arrest of so much productive work during the war leaves the consumers of the world at their mercy. There is a world shortage here as in so many other directions. For the moment there is a lack of pulp, of machinery, and apparently of labour, and the consumer pays the usual penalty in the form of scarcity and high prices. The immediate remedy is to stimulate every stage of the industry to increased exertions so as to tide over the critical period and then to consider how the immensely increased demand is to be permanently met in the future, as it is certain ultimately to be.

The first step would be to develop the pulp-making industry within the Empire wherever there is the available supply of timber. Plans are now being considered for the opening up of forests in Canada and the erection of more pulp mills, and the state of the market would justify similar enterprise in other parts of the Empire, on the principle that we should first utilise our own resources to supply our own needs. The next step, supposing timber to be the main source of supply, is to see to the replanting of the areas as they are used up and the laying down of new plantations in suitable districts. The only way to replace forests is to replant.

But looking beyond the wood-pulp industry, the larger problem is that of discovering other matter in sufficient quantity to supply the raw material for the manufacture of paper. That such material exists no one can have any doubt. It is for the research worker to discover it, for the chemist to show us the most effective and economical means of conversion, and for the engineer and commercial manager to devise methods of production. Sir Harry Johnston suggests that chemists and manufacturers should again turn their attention to the grasses, reeds and rushes of which there is an inexhaustible supply in the tropics. Mr. Raitt, consulting cellulose expert to the Government of India, states that the experiments carried out in this field have not so far led to satisfactory results. That, however, does not mean permanent failure; it seems difficult to believe that these substances, when the right method of treatment is discovered, cannot be converted into paper material. He takes, however, a favourable view of the bamboo, which renews itself annually, and could be produced in almost unlimited quantities. To sum up, there is now one of the largest and most profitable markets of the world threatened with starvation. It is as certain as anything can be that Nature contains in many forms the requisite raw material for conversion into paper. It is up to the chemist and the commercial man to unearth these hidden supplies and to make them available for a great world industry.

Help for Scientific Societies

AMID the noisy clamour about higher wages for the manual worker and about the crushing burden of taxation on the wealthier employer, one may distinguish now and again some still small voice raised plaintively on behalf of our scientific societies, whose vital work is being hampered and restricted by the increasing stringency of their finances. Our con-

temporary, *Nature*, has recently been examining the annual reports of the councils of a number of scientific societies, and its conclusion is that the burden of the cost of their publications is too heavy to be borne any longer without additional support. The great increase in printers' charges and the high cost of paper make the expense of publication so high that the slender funds at the disposal of most societies are unequal to the printing and distribution of papers read at meetings. If publication is discontinued it will mean that the results of patient scientific research will be no longer available except to the author and his immediate friends, and the progress of scientific knowledge must seriously suffer as a result. Holding the view that the members cannot meet the increased demand by the payment of higher subscriptions, it is argued that help should be sought from some public source. The Government, it is pointed out, has already assisted some of the older and more important societies with a partial or complete grant of premises, and it entrusts an annual sum of money, given in the Estimates for this year as £11,000, to the Royal Society to be distributed for scientific investigations by a committee appointed for that purpose as well as £1,000 annually towards the cost of scientific publications. It has also established an important Department of Scientific Industrial Research. It is now strongly urged that a further step should be taken and some direct endowment provided for those purely scientific publications, which have hitherto been maintained by voluntary effort and upon the circulation of which scientific progress so largely depends.

The same problem of finance was approached from another point of view by two writers in a recent issue of the *Journal* of the Society of Chemical Industry, but the remedy suggested there was a slight raising of subscriptions concurrently with increased combination, so as to avoid the expense of overlapping and duplication. It is frankly pointed out that while all institutions are feeling the financial pressure some can only be saved either by an immediate curtailment of their work or of the privileges of membership, or by a substantial increase in the subscription. The writers' conclusion is that relief must mainly be found in closer co-operation and some federal arrangement for reducing expenses. These points are no doubt already familiar to the ruling bodies of the various societies who are faced with the problem of maintaining their work on a much more expensive scale with practically the old revenue. Whatever economies or other steps they may take to help themselves, the case for increased public support remains, and the sooner the better steps are taken to press upon the proper authorities the importance of not allowing scientific activity to be starved.

Securing Our Oil Supplies

THE efficient mechanism of the British Empire depends, it has been said, absolutely upon oil in this new age of transport. When coal was the essential driving-power in traffic and transport our position was impregnable, and it may well be asked how we stand to fare—our oil production being little more than 2 per cent. of the world's output—in the coming age of oil. Hopes for the future are implicitly placed in the Mesopotamian

fields, but it may be ten years before any very material development occurs in that country. Thus, our own interests can only be conserved by the attainment of a controlling interest in at least one of the huge existing concerns. In this direction rumour has been rife in connection with the famous Shell group, about 60 per cent. of the financial interest in which is now represented by Holland. America, on the other hand, is beginning to realise the straits into which her prodigal consumption has landed her, and is making strenuous bids for control of the fields without her borders.

Mr. J. L. Garvin may usually be relied upon to take a businesslike view of a situation of the kind, and in last Sunday's *Observer* he states emphatically that for our maximum security and advantage as regards both business and defence, our alliance must be with the Shell Company and the Royal Dutch Corporation. This vast associated concern has been built up chiefly by two men of immense commercial ability, Sir Marcus Samuel and Mr. Deterding. It controls about a third of the whole oil yield of the world. In the war it was as much at the service of the Navy and the State as though it had been an entirely British affair. Its chief source of supply are the rich islands of the Dutch East Indies, where there are yet more natural reservoirs still to be tapped. But the great fact for our purposes is that the Dutch-British alliance does not depend upon the local chances of any one restricted part of the globe. It draws from all points of the compass—from Mexico and South America on one side to Roumania and Egypt and the East Indies on the other. By constant vigilance and far-sighted enterprise it has been ceaselessly opening newer and wider areas. This very year, after long preparation, the Venezuelan field will begin to contribute to the insatiable demand of modern civilisation for oil. Meanwhile, there are the most insistent rumours that some arrangement between the Government and the Shell group is pending, and although any knowledge of the fact was recently denied in Parliament, it is generally believed that pourparlers are taking place.

The Calendar

May		
17	Chemical Industry Club: "What is a Chemical Engineer?" by H. Talbot. 8 p.m.	2, Whitehall Court, London.
18	Institution of Petroleum Technologists: "Air Lift System of Pumping Oil Wells," by R. Stirling. 5.30 p.m.	Royal Society of Arts, John Street, Adelphi, London.
18	London University: "The Biochemistry of Sterols," by J. A. Gardner. 5 p.m.	Physiological Laboratory, South Kensington, London.
19	Society of Glass Technology: "The Physical Properties of Glass," by C. J. Peddle. 2 p.m.	The University, St. George's Square, Sheffield.
19	Royal Society of Arts: "Electrical Osmosis," by J. S. Highfield. 4.30 p.m.	John Street, Adelphi, London.
20	Chemical Society: Informal meeting. 8 p.m.	Burlington House, Piccadilly, London.
20	Royal Society: Papers by Professor J. N. Collie, Sih Ling Ting, L. Silberstein, T. E. Stanton, Miss D. Marshall and Mrs. C. N. Bryant.	Burlington House, Piccadilly, London.

British Chemical and Dyestuffs Traders

New Association Formed at Representative Conference in Manchester

A STEP of great importance to the future of British chemical merchant interests was taken on Wednesday in Manchester, when a conference of representatives of chemical trading firms sitting at the Chamber of Commerce formally and unanimously adopted a resolution which had been already passed at a previous meeting in favour of the establishment of a British Chemical and Dyestuffs Traders' Association, and took a series of definite steps towards making the decision immediately operative. The conference was presided over by Mr. Fred. T. T. Reynolds (chairman of Millwards Merchandise, Ltd., Manchester), and those present included Mr. Charles Page and Mr. W. G. Wilson (Chas. Page & Co.), Mr. A. F. Butler, hon. secretary pro tem. (R. W. Greeff & Co.), Mr. Clanahan (F. S. Bayley, Clanahan & Co.), Mr. F. L. Shearer (Arthur & Hinshaw), Mr. F. G. Marshall (Julius Hülsen & Co.), Mr. H. Brodrick (Macandrew Moreland Co., Ltd.), Mr. A. F. Williams (Frederick G. Williams), Mr. C. F. Ashworth (G. W. Thornton & Co.), Mr. W. Allpass (James Allpass), Mr. Eric E. Wieler (Dunn Brothers & Co.), Mr. Walter Waugh and Mr. L. T. Waugh (Walter Waugh & Co.), Mr. W. Coventry (De Jersey & Co., Ltd.), Mr. H. C. Wilson (Isaac Braithwaite & Son), Mr. Charles Huxtable (Ayrton, Saunders & Co., Ltd.), Mr. H. Gilliat (E. G. Jepson & Co.), Mr. F. E. Hobson (The Harding Chemical Co.), Mr. E. T. Vienneux (Victor Blagden & Co.), Mr. F. V. Barlow (Sir S. W. Royle & Co., Ltd.), Mr. C. Cecil Harris (The Union Acid Co., Ltd.), Mr. H. Worthington (Higginbottom & Co.), Mr. A. Heywood (T. Paulding & Co.), Mr. W. T. Bruce and Mr. Skelton (Skelton & Co., solicitors). Several letters were read from firms unable to be present or represented owing to business pressure, and all expressed hearty approval of the principle of the movement.

In the notice convening the meeting, which was read by the hon. secretary, it was stated that at the meeting of important and old-established firms of chemical merchants in the United Kingdom, which took place in Manchester on February 10, the Chemical and Dyestuff Traders' Association was formed with a view to providing a medium for collective action in safeguarding their mutual interests under the present abnormal conditions. The Provisional Committee, which was appointed for the purpose, had now drafted rules for the consideration of the members. As conditions were likely to arise in the immediate future which would call for the earnest consideration, and possibly the active intervention, of the Chemical and Dyestuff Traders' Association, it was highly desirable that a strong executive council should be elected without delay, and that the Association should secure suitable offices and appoint a competent secretary. A copy of the draft rules was appended in order to give opportunity for perusal and consideration prior to the meeting. A wish was expressed for a large and representative gathering of the trade at the first general meeting.

It was pointed out in the notice that the undernoted firms were signatories to the letter of January 28, convening the initial meeting: Arthur & Hinshaw, F. S. Bayley, Clanahan & Co., Victor Blagden & Co., Borries, Craig & Co., Ltd., Bryce & Rumpff, Dunn Bros. & Co., R. W. Greeff & Co., T. Henderson & Co., Ltd., E. G. Jepson & Co., Ltd., Leisler Bock & Co., Millwards Merchandise, Ltd., Charles Page & Co., Ltd., Sir S. W. Royle & Co., Ltd., J. M. Steel & Co., W. Waugh & Co., Wrathall & Co., C. Zimmermann & Co., Ltd.

Unanimous Decision to Go Ahead

It was reported that at the preliminary meeting on Feb. 10, on the proposition of Mr. Charles Page, seconded by Mr. Worthington (Higginbottom & Co.), it was unanimously resolved "that an Association shall be and is hereby formed, and shall be called the Chemical and Dyestuff Traders' Association; that the membership subscription shall be 20 guineas per annum; that a provisional committee be and is hereby appointed to draft rules and regulations, to take legal advice concerning the same, and to submit their recommendations to a general meeting of the members, to be called as soon as practicable."

The Chairman said it was considered desirable for that conference at the outset formally to ratify the action taken at

the preliminary meeting, and to re-affirm the decision to establish an association on the lines laid down. Some firms might be represented at the present conference who were not present at the last, and it would simplify the position and place their proceedings on a sure and definite basis if the decisions of the preliminary conference were now formally confirmed.

Mr. Charles Page said he had much pleasure in moving that the resolutions previously adopted be now formally confirmed.

Mr. Weiler seconded the resolution.

In reply to a delegate, the Chairman said that voting for the resolution at this stage did not formally amount to membership of the Association; at the same time, he assumed that the firms represented that day were there because they were actively interested in the movement, and contemplated at the proper stage becoming members of it.

The Hon. Secretary explained that the membership form had not yet been finally agreed on, but when that and other necessary details had been completed the way would be clear for firms formally to join the Association.

The resolution confirming the previous proceedings was then unanimously adopted.

Provisional Committee's Report

The report of the provisional committee appointed on February 10 was submitted by the Hon. Secretary in the following terms:—

The provisional committee which was appointed at the meeting of the 10th February was instructed to prepare draft rules for the consideration of the Association, to take legal advice on the subject, and to make inquiries regarding a secretary and as regards offices in London. The draft rules formulated by the Provisional Committee are in your hands, and have been submitted to Messrs. Skelton & Co., solicitors, which firm has had a considerable experience in matters relating to trade associations.

After consultation with Messrs. Skelton & Co., and learning that such is the course usually taken by trade associations, we advise you that wide powers should be vested in the Executive Council, such powers to be similar to those delegated to the board of directors of a limited company. It must be apparent to all that the active work of the Association should be carried on by the Secretary, subject to the control of the Executive Council, as it would be inconvenient, and in many cases impossible, to call general meetings of the Association at frequent intervals. We suggest, therefore, that as the members of the Executive Council, which you will elect to-day, will enjoy your confidence, or you would not elect them, their powers should be wide in order to permit them to carry on the work of the Association in the interests of the merchant community.

The rules as now formulated provide that the first officers and Executive Council will hold office until the general meeting to be held early in 1921; but, as the Association is only just getting into working order, we advise you that it would be desirable for the first Executive Council to be elected and to hold office until the annual general meeting held early in 1922, by which time the Association will be well established.

The Provisional Committee have advertised for a secretary, and have received a large number of replies, and anticipate no difficulty in securing a suitable secretary at an adequate salary, bearing in mind the duties which would have to be discharged; but they advise that the actual engagement of the secretary should be left to the Executive Council to be elected to-day.

Owing to the general shortage of office accommodation, especially in London, we think that the selection of suitable offices should also be left to the Executive Council, and our idea is that the offices of the Association should be of reasonable size, providing a general office, private office for the secretary, and a writing room or bureau, with telephone, for the convenience of the members of the Association who may desire to use same from time to time. In this room might also be placed the leading trade papers and books of reference, &c., which the Association may acquire from time to time.

The Chairman moved, and Mr. Waugh seconded, that the

report of the provisional committee be received and adopted, and this was unanimously agreed to.

The Question of an Honorary President

The Chairman said it was considered that it might be conducive to the influence and success of the Association, and to the more effective attainment of its objects, if they elected some prominent gentleman, preferably more or less directly interested in their work, to the post of honorary president. This, however, was a matter for the meeting to consider and decide.

After discussion, certain names were suggested, and the provisional committee were authorised to take the necessary steps in the matter.

Election of Vice-President

Mr. Clanahan said he would like very much to be allowed to propose for this position the name of their chairman. Mr. Reynolds had a knowledge of the trade in all its ramifications that it was given to very few to possess. He had also had considerable experience of negotiations with Government departments; he was well known in London as well as in Manchester and other great provincial centres, and he had occupied many public positions of responsibility, including the mayoralty of Southport. From every point of view he was admirably qualified for the position, and if they had an honorary president, Mr. Reynolds as vice-president might be of enormous service to the Association as chairman of the Executive Committee. He had the greatest pleasure in proposing him.

The resolution was seconded by Mr. Ashworth (G. W. Thornton & Co.), supported by Mr. Page and others, and carried unanimously.

Association's Policy Outlined by the Chairman

The Chairman, in acknowledging his election, said he valued highly the confidence his colleagues had expressed in him in the vote they had just given. It was not a position he had sought; at the same time, he was keenly desirous that the Association should be a great success, that it should accomplish for traders all the important objects they had in view, and from all he could learn there was every prospect of their hopes being entirely fulfilled.

It was not generally recognised that chemicals and dyestuffs were important key industries, and that point of view had steadily to be kept in mind. In the past the dominating factors in their business had been demand and supply. There were, of course, other important factors, and he was very much afraid that in the future the over-riding factor might be governmental or political control. For some time to come there would probably be a certain sense of insecurity, owing to various regulations and enactments as to which the trade itself might not be consulted. For the future they intended to be in at the initiatory stage in all these matters, to place their knowledge and advice fully at the service of the various departments concerned, and to see in return that their interests received due consideration. They intended to make their views so known and so influentially supported as to obviate what might, in the absence of such action on their part, become an overshadowing menace to the trade, such as might involve some individuals in disaster, and throw the whole trade into chaos and confusion; that might very well be the outcome of the action of uninstructed bureaucracy. If business regulations were left to people unfamiliar with the facts and conditions, they must necessarily be experimental; but, as a trade, they did not want to be subjected to experiments which might very well result in killing the body instead of curing the disease. Their object was to guard against dangers of this kind. If theirs was a key industry, they desired and intended that the key should be handled to open doors that would lead to a wide and ever-expanding trade, import and export, that would be to their individual and collective benefit and also be of great advantage both nationally and internationally. That was the great problem they had before them as traders. If they made that organisation the success which he felt sure it must be, if they succeeded in safeguarding the interests of the great trading community, and at the same time helping the Government departments to increased knowledge and efficiency in their important work, everyone would agree that they had done a good day's work for the trade when they decided to form that Association.

The Need of the Association

Discussing the attitude of Government departments to the new Association, the Chairman said he had every reason to think it would be cordially welcomed. People who did not know the facts of the case did not fully appreciate the importance of the distributing section of the trades they represented. The authorities now recognised that chemicals and dyestuffs were key industries, but it was not so generally recognised what an indispensable factor distribution was in industry and the indispensable part which the merchant played in completing our commercial organisation. He believed he was safe in saying that the Board of Trade viewed the formation of their Association with the greatest approval, and was anxious it should get into an established position, so that the department could have the full advantage of its knowledge and advice in dealing with the various problems that were bound to arise. In this matter it was of the utmost importance that such knowledge and advice should be available at an early stage, before definite decisions were taken. One case would illustrate the importance of this. Great opposition had been offered to the Anti-Dumping Bill, and it was so strong that the measure had to be withdrawn. He believed he was right in stating that at present the authorities had under reconsideration the Imports and Exports Restrictions Bill in another form. That was a measure that might interest them very closely, and if they attached importance to their interests, and wished to make representations concerning them, by far the most effective time was when the measure was under preliminary consideration, for at that stage the authorities were only too willing to consider any view put forward that represented a collective standpoint. When a measure was once introduced, the Minister in charge regarded it as a certain reflection on himself or his department if the provisions were drastically changed under criticism. They would see, therefore, that the time for making such representations was when the scope and provisions of such measures were being decided. At that stage Ministers and their advisers were glad to have the best knowledge and advice available, and recommendations made then were far more likely to be accepted than if presented after the character of the measure had been decided, for the authorities naturally disliked having to modify their proposals after they had been considered and decided on. In this way there was a great field of usefulness before the Association, and he believed they might count on a cordial welcome from the Government departments concerned with their interests, because such departments, for their own credit, naturally wished to be as well informed and as closely in touch with trade interests as possible.

"If," said the Chairman, "we had the Association that we design and desire, we should have effective material and methods for making collective representations, for consultations with the authorities, and for negotiations with them and with shipping companies and railways and on transport questions generally, and in many other ways it would from time to time be of service to the trade generally.

"Then there is the possibility that such an Association might be made into something like a central bureau to collect and disseminate facts and figures and information of general importance and interest to the members of it. It also might conceivably afford a medium of advice with regard to disputes and grievances, and other matters of that kind which at present we, as individual firms, have to fight out for ourselves, and sometimes in a way that may throw a big expense and responsibility upon an individual firm that ought properly to be borne by the whole trade."

With such possibilities and duties before it, the Chairman concluded, the Association should have a great future, and all that was required was that every member of the trading community should recognise the duty, to himself and to his colleagues, of giving it his best support.

Honorary Treasurer and Other Officers

On the motion of Mr. Page, seconded by Mr. Weiler, Mr. Walter Waugh was unanimously elected hon. treasurer. Mr. Waugh said that it would give him great pleasure to act and to do his utmost to ensure the success of the Association.

Messrs. Fincham, Partridge & Co. (London) were elected auditors; Messrs. Skelton & Co. solicitors to the Association; and the vice-president (Mr. Reynolds), Mr. Waugh and Mr. A. W. Thompson (R. W. Greff & Co.) trustees.

Executive Council

On a ballot, the following seven firms were elected to constitute the Executive Council, each firm being required to nominate its acting representative: Messrs. Chas. Page & Co. (London), R. W. Greeff & Co. (London), Bayley, Clanahan & Co. (Manchester), Dunn Brothers & Co. (Manchester), T. Henderson & Co. (Glasgow), E. G. Jepson & Co. (Leeds) and Wrathall & Co. (Liverpool). It will be seen that geographically the council is widely representative.

The draft rules were considered, and, subject to certain amendments in detail being referred to the Executive Council, were approved and adopted.

On the motion of Mr. Butler, seconded by Mr. Page, a vote of thanks was passed to the Chairman, who, in replying, expressed the meeting's indebtedness to Mr. Butler for his valued services as hon. secretary.

Traders and National Finance

Before closing the meeting, the Chairman remarked that one of the matters the Association might have to watch was that of national expenditure. It might not yet be quite within their scope to discuss the Budget, but he felt that traders generally must be disposed to protest against the continuance of national expenditure on a war basis, and against such an unfair share of the burden of taxation falling on the commercial community.

April Trade Returns

THE trade returns for April continue the satisfactory improvement shown in the previous month, our exports showing a further net increase of £2,552,000, a decline in shipments of foodstuffs and raw materials being more than compensated for by an increase of over £5,000,000 under the head of manufactured goods. The adverse balance of trade, which in March stood at £45,916,000, has been further reduced to £40,495,000, the lowest figure with one exception recorded for several months. The value of imports was £167,154,309, an increase on 1919 of £55,088,486; exports £106,251,692, increase, £47,769,280; re-exports, £20,407,419; increase £7,060,961.

The value of the chemicals, drugs, dyes and colours imported last month was £2,789,306, an increase over April of 1919 of £1,486,470; of oil seeds, nuts, oils, &c., £7,246,029, an increase of £3,174,951; hides and skins, undressed £5,674,603, an increase of £3,031,781; oils, fats and resins, manufactured, £5,946,339, an increase of £3,177,370; leather and manufactures thereof, £2,779,948, an increase of £1,127,069.

As regards exports, we exported chemicals, drugs, dyes and colours to the value of £2,997,383, an increase of £509,832; oilseeds, nuts, oils, &c., £876,452, an increase of £341,582; hides and skins, undressed, £456,368, an increase of £293,621; oils, fats and resins, manufactured, £1,319,225, an increase of £194,510; leather and manufactures thereof, £1,075,934, an increase of £591,182.

Taking the quantities as distinct from values, we exported 7,849 tons of oils, fats, &c., against 7,033 tons in April of 1919; china clay, 78,962 tons, against 19,792 tons; coal tar, pitch, 56,248 tons, against 78,490 tons; coke and fuel, 254,345 tons, against 214,384 tons; soda compounds, 733,449 cwt., against 342,644 cwt.; dyestuffs, 20,396 cwt., against 7,876 cwt.; painters' colours, 213,071 cwt., against 101,267 cwt.; soap, 158,891 cwt., against 219,822 cwt.; candles, 24,963 cwt., against 16,412 cwt.; linoleum, 5,152,600 sq. yds., against 2,137,200 sq. yds.; cement, 62,408 tons, against 39,629 tons.

A memorial was unveiled on Saturday, May 8, to six of the men employed in the works of DUNCAN & FLOCKHART, wholesale druggists and manufacturing chemists, Holyrood Road, Edinburgh, who fell in the war. The memorial has been placed in a prominent position in the yard of the works and is mounted in heavy teakwood surmounted by a tiled canopy with the names of the fallen inscribed. The fund for its erection was subscribed by the employees. A tablet has also been placed in the main stairway of the works by the firm, together with a separate tablet, to the memory of Captain Charles I. Clark, the son of Dr. W. Inglis Clark, one of the directors. Mrs. W. Inglis Clark unveiled the memorials and two buglers of the Seaforth Highlanders sounded "The Last Post" and "Lights Out."

The British Chemical Trade Association

To the Editor of THE CHEMICAL AGE

SIR,—We have received certain inquiries as to the attitude of this Association towards the new Chemical and Dyestuff Traders' Association now in course of formation in Manchester, and some of the trade papers have drawn attention to the fact that we are probably not unconscious of the movement to establish this new Association.

In order to satisfy these inquiries I am instructed to submit the following remarks:—

We are happy to note that certain firms who have not thought fit to join their confreres in the British Chemical Trade Association have at length realised the necessity for trade organisation, and if we have played any part in bringing this conviction home to them, we have fulfilled part of our mission.

We are sorry that the promoters of the new Association have not thought fit to take advantage of the express invitation which has been repeatedly extended to them to come in with us, to join our committees, to give us the benefit of their experience and to furnish any suggestions for the amendment of our constitution, or the extension of our activities, which might be in the interest of the trade at large. However, if the new Association can render a greater service to the trade generally by a separate organisation, the decision of the promoters in this respect will be fully justified.

We have already rendered signal assistance to several firms who are now interesting themselves in the formation of the new Association, by making effective representations on their behalf to Government Departments.

Our attitude is in no sense one of opposition, but, on the contrary, one of cordial readiness to co-operate, if co-operation be desired, as our object is to be of service to the trade as a whole.

The British Chemical Trade Association is (1) a properly constituted body, and membership is open to every member of the chemical trade who is of good repute; is (2) performing in a highly satisfactory manner the functions of a trade association; is (3) officially recognised by all Government Departments as the chemical merchants' organisation.—Yours, &c.,

O. F. C. BROMFIELD, Secretary,
The British Chemical Trade Association.

80, Fenchurch Street, London, E.C. 3.

[We have omitted from this letter certain passages which suggest more than they openly state, and which seem to fall rather outside the rules we try to observe in controversial matters. The remainder is given simply as expressing the official attitude of the Association. Our own view of the functions and position of the new association is stated in an editorial note. The right of its members to take the course of action they believe to be the best in their own interests requires no defence, and their judgment on this point may be inferred from the action they have taken.—ED. C.A.]

Potash Production

It is now over a year since the Chemicals Division of the United States War Industries Board turned over to the Department of the Interior the problem of increasing the potash production of that country. This action was taken by the direction of the President in order that an established branch of the Government should "permanently set itself to the task of emancipating the American farmer from the grip of Germany's monopoly on the world's supply of fertiliser material." Every encouragement was to be given to private industries who would undertake the risk of establishing potash production. The Chemicals Division was to undertake the special work of extracting potash from waste products, and a committee of chemical and other experts was formed to go thoroughly into the question. So far all that has been done, a *Times* correspondent states, has been to recover a comparatively small amount of potash from blast furnace fumes, and to carry out, in a desultory manner, one or two investigations into the possibility of other sources of supply. The expressed opinion in the States is now that it will be cheaper to buy potash, at any price, than to undertake its manufacture or its recovery on a large scale, and eventually the United States should prove a valuable customer to the British chemical industry.

Reviews

CEMENT. By Bertram Blount, F.I.C. London: Longmans, Green & Co. 284 pp. 18s. net.

Although, as Mr. Blount states in his preface to this book, there are already a large number of valuable books upon Portland cement, he need have no doubts as to the reception which his book will receive.

Mr. Blount, who has been assisted by Mr. W. H. Woodcock, F.C.S., and H. J. Gillett, opens with an historical chapter which contains a very interesting quotation from Smeaton's account of the experiments which he made in order to determine the cement most suitable for use in the erection of the Edystone Lighthouse. The next three chapters deal with raw materials, fuel, and manufacture of Portland cement, and do not call for much special comment other than that they are lucidly written and well illustrated. We next have chapters dealing with power, works control, and testing, the last-mentioned chapter describing apparatus and methods commonly used in testing cement.

In Chapter IX. Mr. Blount deals with the much debated question of the chemistry of Portland cement. This chapter contains references to some of the most recent literature upon this important subject. The chemistry of cement is an example (of which there are many in Industrial Chemistry) of the fact that the simple chemical explanations formerly put forward to explain the properties require modification in the light of more recent investigation. The chemistry of Portland cement is a highly technical and still debatable subject, and we strongly recommend the study of Dr. Blount's chapter to those who have not given the subject special attention.

The remaining chapters deal with the uses of cement and its by-products, and the book concludes with useful appendices, the most valuable of which contains foreign specifications for Portland cement, viz.: American, French, Italian, Russian, and Argentine Specifications.

Mr. Blount and his assistants are to be congratulated on a book which is useful for the technical information it contains and is written in a style which makes it extremely interesting to read.

E. S. A.

A Handbook of Quantitative Analytical Chemistry

Frequently, a correspondent writes, the chemist needs a method for the determination of an element—possibly in a mixture involving difficult or unusual separations—either in research or in commercial work. It is necessary to make a thorough search of the literature or to devise a new method. After the latter course has been adopted, it may be discovered that there is a good method described in some journal not readily accessible to the worker. At present there is no general reference book in which *all* the methods of procedure are systematically listed. In any one of the many excellent text-books on quantitative analysis, only the representative methods considered most important by the writer are included, and these are usually discussed in detail.

The Chemical Catalog Company, Inc., 1, Madison Avenue, New York, have just completed arrangements for the publication of a handbook or a compendium of quantitative analytical chemistry. The author is a member of the faculty of one of the universities devoting special attention to chemistry, and has had extensive experience in applied chemistry and in chemical engineering. It is planned to include every method given in chemical literature, both in English and in foreign languages. The work will be in two volumes, one inorganic and the other organic. The Inorganic volume will be published first. Every journal and book likely to contain methods of quantitative analysis will be carefully searched. The material will be thoroughly indexed, not only under the elements and compounds, but also under the commercial articles in which the element is to be determined. Copious references to the original literature will be given.

The price cannot be determined until the work has proceeded long enough for costs to be calculated with some precision, but every effort will be made to keep it low enough to make the book available to every chemist interested in quantitative analysis. More detailed announcements will be made from time to time as the work nears completion and those interested will be given an opportunity to subscribe in advance of publication.

Atomic Weights and Numbers

To the Editor of THE CHEMICAL AGE

SIR,—Dr. Stephen Miall's letter on "Atomic Weights and Numbers" in your current issue raises a number of interesting and difficult problems in a neglected branch of geometry. Some of them probably do not admit of any general answer; thus I doubt whether any formula can be given for even numbers ($2x$) of spheres which can be arranged to form a spherical shell, and, *a fortiori*, no formula for the spheres inside such a shell seems possible. I assume, of course, that spherical shells formed from equal spheres in homogeneous contact are meant.

The complications of the problem are well illustrated by the simple case of seven spheres. The arrangement which Dr. Miall contemplates is probably that in which six spheres are so grouped round a seventh that all the six points of contact lie on the same great circle. This is, however, by no means the only case, as the following considerations show. Twelve equal spheres can be packed round a thirteenth of the same diameter, in which case the twelve points of contact are the centres of the faces of the regular rhombo-dodecahedron. If we wish to leave out six of the twelve possible spheres, this amounts to forming the possible combinations of six elements out of a total of twelve, the number of which, according to the well-known formula, is:—

$$N = \frac{12 \cdot 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7}{6!} = 824$$

In consequence of the symmetry of the dodecahedron, the same arrangement will occur twelve times, so that the number of *different* arrangements will be $824/12 = 77$. All these arrangements will obviously occupy the same *volume*; if Dr. Miall means by "the smallest space" the smallest polyhedron into which the assemblage can be inscribed, the problem becomes extremely tedious and can certainly not be solved offhand.

As regards the last query: "Can one squeeze 14 equal spheres inside an outer shell consisting of 72 similar spheres?" Two points seem reasonably certain without further investigation: only one sphere can be placed inside an outer shell consisting of twelve spheres (all the 13 being equal), and it therefore seems in the last degree improbable that 14 spheres can be placed into a shell consisting of 72. Working outwards from the 12 spheres of the rhombo-dodecahedral assemblage it also seems impossible to arrange 72 spheres so that their centres lie on a sphere.

If Dr. Miall admits outer shells which are not spherical and heterogeneous contact between the spheres, the possibilities become too numerous to contemplate.—Yours, &c.,

43, King William Street,
London, May 12.

EMIL HATSCHER.

As a result of the refusal of the employers in the drug and fine chemical industry to concede an advance in wages to the workers in the trade, the employees of the firm of EVAN, SONS, LESCHER & WEBB, of Bartholomew Close, London, have decided to cease work pending a settlement of the claim. The strikers are members of the General Workers Union. A court of arbitration has decided against giving any advance at all, a decision which the workers claim was against all the evidence submitted. The secretary of the workpeople's side of the joint committee of the London drug and fine chemical industry is Mr. A. Boyd, 1, Southampton Row, London, W.C.1, and the employers' secretary is Alderman Sir William Glyn-Jones.

In accordance with agreements in connection with the chemical, the engineering and foundry, shipbuilding and ship-repairing trades the following FOUR-MONTHLY WAGES APPLICATIONS were sent to the Employers' Associations on Monday by the National Federation of General Workers for hearing before the Industrial Court in June. "An advance on wages rates existing as on June 1 next to general workers both men and women as follows:—Adults (21 and over), 20s. per week; juniors (under 18), 10s. per week; piece workers an equivalent percentage increase on piece prices; workers 18 and under 21 who are doing adult work to receive adult pay. Similar increases are claimed for workers in the clay explosives and soap and candle trades.

The Chemical Society's New Bye-Laws

IN order to secure wider powers than those conferred under the original charter of 1848 the Council of the Chemical Society have obtained from the Privy Council a supplemental charter.

An extraordinary general meeting of the society was held on Thursday, April 30, to consider the new bye-laws proposed by the council by which the new powers obtained under the supplemental charter should be put into operation. The new bye-laws were approved by the general body of Fellows, and will come into force on June 1.

The original charter of 1848 included many hampering restrictions, prescribing, for example, the maximum size of the council and the manner of its election. Such provisions, devised for the conduct of a small society associated mainly with London and immediate districts, were quite unsuitable now that the Society numbers more than 3,500 Fellows, and when probably about two-thirds of these reside beyond the metropolitan area.

There had been some doubt also whether, under the original Charter it was permissible to elect women as Fellows of the Society. Uncertainty on this point has now been removed by the supplemental charter which provides that Fellows may be of either sex.

Another important feature of the new bye-laws based on the supplemental charter is the attempt to secure for provincial Fellows a greater share in the conduct of the Society. Hitherto, every important matter affecting the Society, including the election of officers and council, has been determined at a general meeting by a majority of the Fellows present and voting. Under the supplemental charter the Society has power to elect officers and council by a postal vote, and further, in certain cases, to take a poll of all Fellows resident in the United Kingdom. These powers have been incorporated in the new bye-laws.

Another important aspect of these is that there has been kept in view the contingency of combined action with kindred societies concerned in the development of chemical science, as, for example, in the possible acquisition of common premises, or in the publication of joint abstracts. Under the new provisions there will be greater liberty to deal with such a situation if and when it arises, and it may be that these particular modifications of the bye-laws will prove to be amongst the most important that have been made.

The British Chemical Trade Association

THE following communication has been received from the British Italian Commercial Association, 12, Nicholas Lane, London, E.C. 4:—"We are the London agents of the British Chamber of Commerce for Italy, our objects are those of a Chamber of Commerce. As such we do not work for profit, but for the development of trade between the British Empire and Italy. Little is known here about the Italian mineral waters and natural salts, which, unlike the similar German and Austrian products, have not been largely, if at all, advertised. Nevertheless, some of the Italian products, such as the waters and salts of Montecatini are pronounced by competent and independent medical authority to be superior in their action on the liver to those of Karlsbad. We are anxious to find some British firm experienced in the marketing of this class of article and who would be willing to join with a British financial interest in pushing these products of an allied nation at this favourable time when the sales of the better-known products are suffering from the unpopularity of the countries where they are produced." Members interested should communicate direct with the Italian Association.

Members are requested to forward any information from their records of sales or quotations of caustic soda 76 per cent. American standard, c.i.f. Italian Port or U.K. Port, on or about March 18, 1920. Information supplied will be treated with confidence and members names will not be disclosed without first obtaining their permission.

Members who are interested in the Chilean Market are invited to forward catalogues to the Commercial Secretary, H.B.M. Legation, Santiago.

An inquiry has been received for sodium sulphide 60/65 per cent. in drums. The quantity required is up to 10 tons per month. Replies to the Secretary of the Association, 80, Fenchurch Street, E.C. 3.

The Institute of Chemistry

ACCORDING to the "Proceedings" of the Council it was decided at the last meeting to amalgamate the Nominations and Examinations Committee and the Institutions Committee, and the following three additional special committees were appointed:—Legal and Parliamentary, Benevolent Fund, and Research Chemicals Committee.

An account is given of a vigorous protest which the Council addressed to the Stepney Borough Council against the condition, in the appointment of a borough chemist and analyst, that the new official should act under the direction of the medical officer of health. The Council's claim was that the analyst should be directly responsible to the Council. The principle involved in the suggestion that the public analyst should be in any way subordinate to the medical officer of health (it was contended) is contrary to the interests of the profession of chemistry, while the proposed conditions, if insisted upon, would undoubtedly have the effect of dissuading many qualified men from becoming candidates for the appointment. The Council, however, declined to modify the condition.

The following candidates were successful in the April examinations of the Institute of Chemistry recently held in London, Manchester and Sheffield:—

For the Fellowship: In the branch of organic chemistry, R. O. Eames, B.Sc. (Wales), and H. W. B. Clewer; in the branch of the chemistry of food and drugs, fertilisers and feeding stuffs, soils and water, Norman Ratcliffe; in the branch of the chemical technology of textile manufacture, E. Clayton.

For the Associateship: In the branch of organic chemistry, E. C. Pickering, B.Sc. (Lond.), and S. B. Phillips; in the branch of the chemistry of food and drugs, fertilisers and feeding stuffs, soils and water, F. N. Appleyard and A. Lees; in the branch of the chemical technology of textile manufacture, R. Humphries; in the branch of the chemical technology of cement manufacture, S. Bowman.

For the Certificate: In the branch of the chemistry of food and drugs, fertilisers and feeding stuffs, soils and water, S. Dixon, M.Sc., A.I.C.

U.S. Criticism of Dyestuffs Combine

IN a criticism of the Dyestuffs Tariff Bill in the U.S. Senate on Saturday, May 8, Senator Thomas, of Colorado, read the terms of a contract between Levinsteins, of Manchester, England, and the E. I. DuPont de Nemours Company, of New York, which, he alleges, was aimed to bring about a world monopoly in dyestuffs. Levinsteins, under the terms of the contract, were to have exclusive rights for the use of their own and the Dupont patents and secret processes in the Old World, while Duponts were to have similar rights in America. A suit was brought by Mr. Edgar Levinstein, Senator Thomas said, for alleged breach of this contract, and this suit revealed the world dye monopoly plan. Mr. Thomas asserted that the contract, together with a letter read by Senator Kenyon in the Senate from the publicity manager of the Duponts, which Mr. Kenyon construed as threatening to withhold Dupont money and support from General Wood's candidacy for the Presidency of the United States if Senator Moses, his Eastern manager, did not cease opposing the Dye Bill, clearly indicated the interests behind the Bill. As to the Far East, the contract said: "It is intended to hold in June, 1917, in America a meeting by representatives of the parties hereto for the purpose of arranging selling facilities for non-exclusive Asiatic territory, particularly Japan and China, the intention being to arrange if possible a joint selling company, the capital of which is to be subscribed, and its sales to be divided as nearly as possible in equal parts."

In a statement to a correspondent on this matter, Dr. Herbert Levinstein, managing director of the British Dyestuffs Corporation, said that though the statement is partly correct, it is somewhat garbled. "It is well known that there is an agreement between the two companies named," he said, "but the assertion that this is for the purpose of sharing the world monopoly of dyestuffs is merely a wild statement on the part of the Senator referred to. The agreement has as its object merely the interchange of information."

The Dyeware Situation

From the Colour User's Standpoint

Mr. HENRY K. GILL (Manchester), a member of the Council of the Colour Users' Association and Chairman of the Committee which recently went abroad under the auspices of the Board of Trade to purchase dyestuffs for British users, delivered an address on "The Dyeware Situation, viewed from the Standpoint of the Colour Users," at a meeting of the Yorkshire Section of the Textile Institute, held at the Great Northern Hotel, Bradford, on Thursday, May 6.

Mr. Gill said that if there were one message he could offer to Bradford colour users, it was in emphasis of the importance of all colour users vitally and constantly interesting themselves in everything connected with colour production. They must do everything they could to ensure a supply of really well-educated and thoroughly trained chemists for the work which was before the country. It was essential that colour users should consolidate their position, and turn more definitely than they had done in the past to the question of the separate industries, for they would have to provide means whereby the separate industries might very plainly express themselves and voice their position.

The Colour Users' Association were endeavouring to ascertain what was the actual view of the Government on the question of national defence, because it must be obvious to them all that synthetic dye making plant must be maintained, as it was essential for national defence. No user of dyes expected the Government to provide his dyes for nothing, but the dye user did expect that his industry would not be seriously prejudiced because of the necessities of national defence.

In the building up of a satisfactory dye-making industry equal to providing all that was required in the way of national defence in the way of dyes for the use of traders and for the development of the dyeing industry there must be an apportionment of the expense as between the Government of the country and the user of dyes. At the present time it was quite clear that there was difficulty. The higher the prices of wool or cotton, the more important it was that the dyes applied to fabrics made from these articles should be reliable.

Distribution of Dyes

A member suggested that a more equitable distribution of dyes would be helpful. If they could have a house in Bradford which would hold stocks they might not be tempted to order more than they could use, and so cause others to go without.

Mr. Gill said no method of distribution would be satisfactory unless approved by the trade. Everybody needed stirring up—the Government and also the dyemakers. The shortage was not of one material, but of many.

The question had been before the Board of Trade as to whether it was right that reparation dyes should be distributed by a system of what was termed "limited tender." The Colour Users' Association put forward the view that "limited tender" was an arrangement which might be calculated to prejudice the small men and tend to put the supplies in the hands of the larger and wealthier concerns.

Recent Wills

Mr. J. B. Schlesinger-Delmore, Ph.D., of Johannesburg, a director of the New Transvaal Chemical Company, Ltd.	£89,705
Sir William Osler, Regius Professor of Medicine in the University of Oxford since 1905 (net personality, £11,650). Professor Osler has left his medical and scientific library (as catalogued) to the Medical Faculty of the McGill University, Montreal (where he was at one time professor of the Institute of Medicine), and his residence (13, Norham Gardens, Oxford) is to be given to the dean, canons and governing body of Christchurch as the residence of the Regius Professor of Medicine, on the death of his wife, or earlier if she should wish.	£15,865

MR. F. E. CHERRY has been appointed to teach drilling during the present term in the department of petroleum mining at Birmingham University.

Society of Public Analysts

At the ordinary meeting on Wednesday, May 5, at the Chemical Society's Rooms, Burlington House (Mr. Alfred Smetham, president, in the chair), a certificate was read for the first time in favour of Mr. U. Aylmer Coates.

Certificates were read for the second time in favour of Miss D. G. Hewer, B.Sc. (London), Miss R. C. H. Johnson, and Messrs. H. Hall, F.I.C., G. T. Bray, A.I.C., F. W. G. King, J. H. Stubbs, M.Sc. (Victoria), F.I.C.

The following were elected members of the society: Messrs. L. H. Mills, B.Sc. (Birmingham), A.I.C., and F. R. Dodd, F.I.C.

Papers

"A Volumetric Method of Estimating Iron" was described in a Paper by Mr. H. Droop Richmond and Miss Edith M. Ison, who stated that the method was applicable in the presence of hydrochloric acid, phosphorus oxy-acids and organic matter, and was primarily devised for the estimation of iron in syrups. Colouring matter was destroyed and the iron converted to the ferric state by means of potassium permanganate in the presence of hydrochloric acid. Strong hydrochloric acid and sodium bicarbonate were then added to produce a CO₂ atmosphere, and the ferric iron then titrated with N/10 stannous chloride, using thiocyanate as indicator. The paper included detailed hints upon the manipulation of the method.

In a paper entitled "Estimation of the Age of Ink in Hand-writing," Mr. C. A. Mitchell dealt with the importance of knowing dates of alteration in the composition of inks, and described the various compositions. He distinguished between old and modern inks, and artificial imitation of old inks. Changes during oxidation and methods of recording changes of colour were dealt with, also copying methods of estimating age, chemical tests and artificial ageing of inks. Various law cases bearing on the points dealt with were also mentioned.

Mr. E. R. Dovey, in a Paper on "The Examination of Chinese Crude Camphor," said the amount of camphor oil present was determined by submitting a 100 gm. portion to pressure in a steel press, and from the weight of the pressed cake the loss of water and oil was found. The moisture was determined on the original sample, and also on the pressed cake, by the calcium carbide or other method, and by the difference the weight of water lost in pressing was found. This subtracted from the total liquid expressed gave the amount of oil expressed. It was assumed that the water remaining in the sample was associated with as much oil as that in the expressed liquid, and the total oil present was calculated on that basis.

During the hearing of the South Metropolitan Gas Bill, before a Select Committee of the House of Lords last week, the Automobile Association and other motor fuel users put forward a strong plea that the extraction of benzol during the gas-making processes of the company should be made compulsory under the Bill.

Mr. Alan E. Munby, in a letter to *Nature* on the Standardisation of Laboratory Fittings, refers to the enormous increase since the war in the number of science students in our schools and universities, and states that the material requirements of science teaching are expensive, and, though heavy outlay is in the main inevitable, it seems probable that if costs cannot be reduced the very necessary expansion of science in our schools may, in many cases, have to be deferred or abandoned, and possibly curtailed in our higher institutions. "The character of the fixed fittings in the laboratories," he states, "has altered but little for many years, and it seems pertinent to inquire whether something could not be done by the use of alternative materials or by standardisation to reduce their cost. I recently brought this matter to the notice of one of our learned societies, and received a very cordial reply from its council, which has referred the question to the Department of Scientific and Industrial Research; and I have reason to believe that this department is proposing to take some action, in which event I have arranged that the Science Standing Committee of one of our Royal institutes shall be represented at any deliberations. Things, however, move slowly, and time is passing, which must be my excuse for troubling you with this letter in the hope that the subject may raise some interest, and possibly lead to some constructive suggestions."

Nickel Iron Alloys

At a meeting of the Physical Society of London, held on April 23, at the Imperial College of Science (Sir W. H. Bragg, F.R.S., President, in the chair), the fourth Guthrie Lecture was delivered by M. Charles E. Guillaume on "The Anomaly of the Nickel Iron Alloys: its causes and its applications."

The lecturer began by a reference to the work of John Hopkinson, and to his own early work on the perfecting of standards of length. His first experiments were on nickel, which had two great advantages over brass for metrological work, viz.: its smaller coefficient of expansion and greater freedom from corrosion. He would probably not have looked further but for the difficulty at the time of getting large bars of the material free from flaws. In investigating the ferro-nickel alloys, his first experiments were on their magnetic properties, as these were easier to investigate than the coefficients of expansion. He showed and explained curves showing the variation of magnetic properties, and of the coefficients α and β in the expansion equation $l = l_0(1 + \alpha\theta + \beta\theta^2)$ for alloys both in the irreversible and reversible categories, and showed from the curves how it was possible to obtain alloys with any desired coefficient. The anomalous magnetic behaviour of some of the alloys was illustrated by demonstration experiments of the effect produced on the magnetic condition of bars of the materials by dipping in hot water or liquid air. He then dealt with the properties of ternary alloys containing iron, nickel and a third element. Manganese alloys were those most extensively used. He exhibited a cardboard model of Guthrie's three dimensional diagram for ternary alloys. The addition of the third element raised the minimum expansion. In the case of carbon and chromium the elastic constant was raised. The curve connecting Young's modulus with the percentage of nickel in ferro-nickel alloys also showed an anomaly in the same region as the expansion.

Instability

The chief weakness of the alloys from the point of view of the metrologist was instability. If a piece of invar were cooled from a high temperature in air at 100°C. its length reached a steady value in about 100 hours. If it were then cooled to 50°C. its length would increase to another steady value, reached in about 1,000 hours or so. If it were then cooled to zero it would still further lengthen, a steady state not being reached for a very long time. If the temperature were then raised again to 100°, the length would diminish to its initial value for 100°. The total change of this character between 0° and 100° amounted to about 30 millionths of the length. With increasing carbon content the instability very rapidly increased. It was possible from the amount of the instability to estimate the carbon to 1/100th per cent. Moreover, the curve connecting the instability and the carbon content passed through zero, showing that the instability was due to the carbon. It was therefore possible to get an invar of perfect stability.

Among the applications to which invar had been put, the speaker instanced pendulum rods, leading in wires for electric lamps (an alloy being chosen from the curves so as to have the required coefficient of expansion), wire standards for base measurements in surveying, &c., and showed curves of the variations of height of the Eiffel Tower with temperature, as measured relatively to invar wires. Another important application of those alloys was in chronometer construction.

Reverting to the curves for Young's modulus, the lecturer predicted that an alloy would shortly be produced having a practically constant modulus over a range of 200°C.

Sir R. T. GLAZEBROOK, in proposing a vote of thanks to the lecturer, said that everyone in the room must have realised for many years the value and importance of invar, and would be glad to have met its discoverer; but they should not forget his other claims as a scientist. It was largely to the work of M. Guillaume in the early days of the Bureau at Sèvres that they owed their knowledge of mercurial thermometry. The lecturer had illustrated the important connection between science and industry, and how, if that connection were to be strong and productive of the best results, it was necessary that scientific investigations should be carried out to their fullest extent. They had seen how, in the first place, the various physical properties of these steels had been examined, and how the results so obtained had subsequently been of the highest value in solving problems of great practical importance.

Chemical Trade Inquiries

LOCALITY OF FIRM OR AGENT.	MATERIALS.	REF. No.
Australia (Melbourne)	Glassware; dry colours ...	635
India (Bombay)...	Lubricating oils; greases, &c. ...	636
India (Punjab, Lahore)	Catalogues and advertisements of machinery for dyeing of cotton, wool and silk; pottery; oil extraction; soap; wood pulping; glass. Replies to the Director of Industries, Punjab, Lahore, India.	...
Canada (Montreal)	Mining and metallurgical machinery, &c.	638
Canada (Alberta)	Aluminium ware, &c. ...	640
Canada (Montreal)	Disinfectants ...	647
Cuba (Havana) ...	Crude oil engines; steel sugar-cane cars; corrugated asbestos sheets.	676
Quebec ...	Drugs, chemicals and hides ...	688
Italy (Genoa) ...	Agricultural chemical products ...	695
Greece (Salonica)	Chemical and pharmaceutical products; soap; candles	693
Africa (Algeria) ...	Chemical manures ...	703

The following articles have been taken off the prohibited list, and can therefore be exported freely without licence: Quinine sulphate, cod liver oil and preparations containing cod liver oil.

The Board of Trade are now prepared to consider applications for licences to export restricted quantities of carbolic acid crystals. Applications will be dealt with on the 1st and 15th of each month only.

Germany's Big Dye Profits

THE balance-sheets of the large aniline dye-making companies of Germany show that, whatever the troubles of industries generally are, the difficulties in their trade are not so great as to prevent them from making big profits. The report of the Farbenfabriken vorm. Fr. Bayer & Co.; Leverkusen, just issued, shows a net profit (at the nominal rate of exchange) of £1,450,000, as against £654,000 last year. A dividend of 18 per cent. is being paid, as against 12 per cent. last year and 20 per cent. for each of three previous years. The Farbwerke vorm. Meister Lucius and Brüning, Höchst-on-Main, has a net profit of £1,210,000, as against £750,000 last year and a dividend of 14 per cent., as against 12 per cent. last year, is being paid. Of the new capital of £4,500,000 raised by this Company last December, it is stated, the firms in the German coal-tar colour ring have taken up 40 per cent. in shares bearing a fixed rate of interest of 3½ per cent., but carrying a double voting right, in order to prevent any danger of the control passing into foreign hands. The Berlin Aniline Colour Works is paying a dividend of 18 per cent., as against 12 per cent. last year.

The Dangerous Drugs Bill, the text of which is now issued, is intended to regulate the importation, exportation, manufacture, sale and use of opium and other dangerous drugs. It has been prepared to give effect to the International Opium Convention signed at the Hague in 1912. By the Treaty of Versailles (Article 295), Great Britain bound itself to bring the Convention into force, and for this purpose to enact the necessary legislation without delay, and in any case within a period of 12 months from the coming into force of the Treaty. The drugs to which the Act applies are prepared opium, morphine, cocaine, ecgonine and diamorphine (commonly known as heroin), and their respective salts, and medicinal opium and preparation, admixture, extract or other substance containing not less than one-fifth per cent. of morphine, or one-tenth per cent. of cocaine, ecgonine or heroin. Any person acting in contravention or failing to comply with any regulation made under the Act, and found guilty of an offence, is liable to a fine not exceeding £200 or to imprisonment with or without hard labour for six months.

Chemical Matters in Parliament

Sale of Quinine

Mr. Glanville asked the Minister of Munitions (House of Commons, May 6) whether on or about February 23 several hundreds of thousands of ounces of quinine were sold to John Bell, Hills & Lucas by the Ministry; what was the exact quantity of quinine in question; what was the sum of money realised; the names of other firms which tendered and the sums offered by them for this quinine; whether an official charged with the disposal of this quinine was in the employ of John Bell, Hills & Lucas before being given an official position; and whether he resumed his connection with that firm immediately after the sale of the quinine referred to?

Mr. Hope: A considerable quantity of compressed tablets of quinine was recently sold by the Disposal Board to John Bell & Croyden, Limited. The quantity of quinine salts contained therein amounted to approximately 270,000 ounces. Fifty-six invitations for tender were issued, and amongst those who offered were Whiffen, Howards, and T. & H. Smith, Limited. The price paid was slightly in excess of the valuation made by the expert advisers of the Department, and was substantially larger than the next highest offer received. The answer to the last two parts of the question is in the negative. The official responsible for the disposal of these tablets is a Civil Servant of many years' standing, and he is still in the service of the Disposal Board.

Power Alcohol Production

In reply to Mr. Pennefather (House of Commons, May 6), Mr. Bonar Law stated that the inquiry which is being made into the production of power alcohol was not confined to this country alone, but would embrace the whole of the British Empire. Progress was being made but in view of the wide scope of the subject it was not possible to make any statement at present.

Gretna Factory

Mr. A. Short asked the Parliamentary Secretary to the Ministry of Munitions (House of Commons, May 6) whether many of the buildings at Gretna were built on a foundation of peat and had already given away; and whether he could give an assurance that all the buildings used for the manufacture of explosives in this factory would be able to stand the strain of continued work without considerable and constant reconstruction and repair?

Mr. Hope: While H.M. factory, Gretna, was under construction, subsidence was noted in several buildings. Action was immediately taken to remedy this subsidence and to prevent recurrence. The buildings have withstood the very heavy strain of war-time production for three years without further subsidence, and no future trouble is anticipated. The total staff employed at Gretna factory, as on April 28, was 1,140, of whom 154 are women and 356 ex-service men.

Benzol for Motor Traffic

The Minister of Transport (House of Commons, May 10) informed Sir W. Joynson-Hicks that there were no actual figures showing the proportion of motor vehicles now running on benzol, but it was estimated on the best information available that at least one-tenth used benzol or benzol mixed with other non-dutiable fuels.

Dyestuffs from Germany

Mr. A. Shaw (House of Commons, May 10) asked the President of the Board of Trade whether, until the judgment of Mr. Justice Sankey on the subject, there was in operation a prohibition or restriction upon the importation *inter alia* of dyestuffs from Germany; and, if so, for what reason and for whose benefit?

Sir R. Horne: The importation of dyestuffs from any source except under licence was prohibited until the date of the judgment to which my hon. friend refers. This prohibition was maintained until that date for the purpose of promoting the dye-making industry in the United Kingdom, in order to safeguard the country from a recurrence of the difficulties which arose from pre-war dependence upon foreign sources of supply.

Mr. Shaw: Is my right hon. friend aware of the very grave injury inflicted by these Regulations upon the textile industries of the country, especially in the export trade, and will he see that a new clause is inserted; and that nothing of the kind takes place again, in view of the great world shortage?

Sir R. Horne: I think my hon. friend must forget the pledges which have been given by all Governments since the war began, in connection with the dyeing industry, with a view to preserving our independence of foreign sources of supply.

Captain Wedgwood Benn: What has been happening to the dyeing industry since the Sankey judgment? [Hon. Members: "It has been dy(e)ing!"]

Sir R. Horne: My hon. friend knows that we have not yet met with that opposition to the dyeing industry which we must anticipate in the near future?

Oil Wells in Great Britain

Mr. Kellaway, answering an inquiry by Lord Curzon (House of Commons, May 11) as to the number of borings for oil in Great Britain, said:—Of the 11 wells which had been drilled one has been abandoned owing to the difficulty of shutting off large quantities of water which were encountered. Traces of oil have been found in five wells, and one well at Hardstoft, in Derbyshire, has produced oil in quantity. This well has a natural flow of 50 barrels per week. An experiment in baling showed that it would be possible to increase this quantity to 250 barrels per week. The total amount of oil produced to date is about 2,800 barrels, or 100,000 gallons. The oil is being retained in storage pending a decision on the question of oil rights in this country. Drilling is proceeding in nine other wells, and it is hoped that five will shortly be completed.

Action Against Oil and Chemical Co.

On Friday, May 7, in the King's Bench Division, Mr. Justice Bray tried an action by the Vienesette Oil Syndicate, Ltd., of Fenchurch Street, against the Russell Oil & Chemical Co., of York Works, Stratford, to recover damages for breach of contract.

The plaintiff's case was that they bought from the defendants two lots of linseed oil at £65 10s. per ton f.o.b. nett, the plaintiffs requiring the goods for shipment. They alleged that the defendants failed to deliver within a reasonable time and sued for loss of profits due to the difference in the market prices.

The defendants pleaded that under the terms of the contract they were entitled by the custom of the trade to cash before delivery and that they were informed by the plaintiffs' agents that payment could not be made under the arrangement at the moment and that there was a repudiation of the contract, confirmed later by telephone.

His Lordship gave judgment for plaintiffs for £59 15s., with costs.

Spinning of Artificial Wool

Experiments conducted at Leeds University in the SPINNING OF ARTIFICIAL WOOL into fabric are stated to have met with conspicuous success. The department under Professor Barker was asked to take it up by certain firms. First of all they attempted it on woollen machinery with 50 per cent. artificial and 50 per cent. natural wool, and then with wholly artificial wool, and in neither case did they meet with difficulties. Students in the dyeing department have dyed the new wool and found that it dyes remarkably well. Professor Barker, in referring to the experiments, said that he could not tell the composition of the wool substitute. It had a considerably harder feeling than wool. He thought the cost would be under that of wool, but not much. The object was to supplement the supply of wool rather than to offer a cheaper substitute. Firms should have no difficulty in manufacturing it in large quantities. It was all right for medium or coarse wools, but there was still a question as to whether it would do for finer. Experiments are proceeding in regard to lustre, strength, colour, and type of fabric for which the artificial wool is best suited.

Nitrate and Potash Deposits

According to *Commercial Fertilizer*, the recent discovery of large deposits of nitrates and potash in the Poison Hills of Prieskā, South Africa, will prevent the necessity of depending on the deposits in Germany and in Chile which have hitherto had almost a monopoly. It is believed that this discovery will prove the most powerful factor in the economic reconstruction of South Africa.

Naphtha or Tar Oil

Distillers' Dispute with Railway Companies

A QUESTION between the Midland, the Great Western, and the Lancashire & Yorkshire Railway Companies and Brotherton & Co., Ltd., of Leeds and Liverpool, and W. Butler & Co. (Bristol), Ltd., as to the classification of a particular tar product, came before the Railway and Canal Commission Court on Monday, consisting of Mr. Justice Lush, Mr. Tindal Atkinson, K.C., and Mr. Macnamara.

The question, said Sir John Simon, was as to a product which the two respondent companies consigned by railway. There was a dispute between the parties as to what its proper description and character was, and as to whether it was to be regarded as dangerous goods. The view of the railway companies was that it was coal tar naphtha, one of the products obtained from the treatment of coal tar. The view of the respondents was that the traffic was tar oil—also a product of coal tar, but a product which was in the railway companies' contention, to be distinguished from naphtha, and which was not dangerous when consigned by railway in the sense that naphtha was. If the product in question was to be regarded as tar oil or mineral tar oil, then they would find it had a place in the statutory classification. If, on the other hand, it was properly to be regarded as naphtha, it would not be found in the statutory classification. But there was, in addition to the statutory classification, what was usually called "July clearing-house classification," which included a number of things that were not in the statutory list, and also sometimes included a concession in reference to things that were not in the statutory classification, by putting them in a more favourable class. Both respondents were tar distillers.

Counsel then described how coal tar was got from coal as a by-product in gasworks, and this by-product was disposed of to tar distillers, who, in turn, got from the coal tar various products, including naphtha. This product was a very dangerous thing once it caught fire, and the railway companies said it was one of the things not included in the statutory classification, and one for which they were entitled to a special charge. On the other hand, tar oil they were prepared to take in the class of goods which were not dangerous.

As to the answer made by the respondents to the railway companies' case, they denied that what they had been sending was naphtha, and said it was mineral tar oil, and that it was not dangerous, and ought not to be treated as dangerous goods. The two respondent companies represented the Local Tar Distillers' Association. The railway companies wanted to deal with the important industry with the utmost consideration, but in the interests of safety they desired to have this commodity declared to be what they said it was.

Chemists' Evidence

Mr. Leonard Archibald, chief chemist to the Midland Railway Co., said he had analysed twelve samples of goods conveyed by the Midland, and the conclusion he arrived at in every case was that the sample should have been described as naphtha.

In reply to Mr. Justice Lush, Mr. Whitehead said his contention was that this commodity was not properly described as naphtha, and in any event that it was not dangerous.

Mr. Ballantyne, the well-known consulting chemist, said the distillation test was one of the best tests for distinguishing between naphthas, on the one hand, and the heavier tar oils, on the other.

Mr. Horatio Ballantyne, consulting chemist, a witness for the plaintiffs, cross-examined by Mr. Holman Gregory, K.C., on Tuesday, said that naphtha was neither an oil nor a spirit, but as there was no definition of spirit that did not help them. It was a hydro-carbon freely volatile—a solvent naphtha.

Mr. Gregory: Murray's English Dictionary gives the meaning: "Naphtha is a name of Oriental origin, originally applied to an inflammable volatile liquid."

Mr. Ballantyne: That would apply.

Mr. John H. B. Jenkins, chief chemist of the Great Eastern Railway, said that from the practical point of view naphtha was dangerous because of the rapidity with which it caught fire, and the rapidity with which the fire spread, so that it was almost immediately uncontrollable. The witness agreed that the evaporation test was a very effective test, and it was confirmed by the flashpoint and distillation tests.

Mr. Butterfield, analytical and consulting chemist, of Westminster, said he had examined the samples scheduled to the case.

All of them were dangerous goods, giving off a highly-inflammable vapour, which might be ignited by a flame at a distance.

Mr. R. Sinclair, surveyor to the Fire Offices Committee, said he had seen analyses of the samples in the case, and undoubtedly the presence of such goods in warehouses would involve the application by insurance companies of a higher rate than the normal. In the view of the insurance companies, such goods were hazardous goods—they did not use the word "dangerous."

Mr. Henry Smith, chemist of the Lancashire & Yorkshire Railway Company, put in analyses of three samples in the company's schedule to the case. It was the view of the company that the consignments they were now discussing were dangerous.

The Defendants' Case

Mr. Gregory, opening the defendants' case, said that those products had been carried as non-dangerous goods for at least the last 40 years, and there had been no suggestion that the goods were dangerous until recently, when railway companies had tried not to make traders send the goods under restrictions.

Mr. Thomas Butler, managing director of Wm. Butler & Co. (Bristol), Ltd., said they had carried on business for about seventy-five years, and they had been sending mineral tar oil over the railways at any rate since he had been in the business—forty-one years. The railway companies had for long been trying to get his company to pay a higher rate, but they had not at any time complied with their request. The dividing line between naphtha and mineral tar oil was that naphtha would burn of itself if a light were put to it, whereas mineral tar oil would not burn unless mixed with sawdust or some material. He had never heard of an accident through the consignment of the product or in the handling of it at their works.

Mr. T. Butler stated in re-examination that during the 41 years he had been in business they had never in their works treated this product as a dangerous article. The railway companies had been asking for a higher rate for 20 years because they said the producers wrongly consigned the article as tar oil. The producers said it was the only article that could be mineral tar oil within the railway classification; everything else was creosote.

Mr. John Lukes, traffic manager to Brotherton & Co., said they sold large quantities of mineral tar oil, consigned in steel drums or barrels and railway tank wagons. They had never treated this article as dangerous goods, or had any reason because of fire or explosion in their works to treat it as such; and they had had no complaints from the railway companies.

Professor H. T. Morgan said he had been chemist to a large number of companies. He expressed the opinion that this so-called mineral tar oil would be distinctly less dangerous than solvent naphtha, although it might be more dangerous than creosote. He did not think the product in question could fairly be called naphtha.

Dr. Percy E. Spielman, Fellow of the Institute of Chemistry, said he was of opinion that for the purpose of railway transit this product was not dangerous. He did not say there was complete immunity, but it would be under exceptional circumstances if anything serious happened.

The defendants' case was concluded, and the hearing was adjourned.

Much concern is felt by the people of Stornaway and the Island of Lewis at the threatened abandonment of Lord Leverhulme's great schemes for the development of the island. The local public bodies are appealing to the Secretary of Scotland to have the Government's attitude modified, and to Lord Leverhulme not to abandon the scheme until the result of the negotiations are known.

SULPHATE OF AMMONIA, superphosphate of lime, basic slag, potash, and compound fertilisers containing any of these substances, are included in the schedule of the Fertilisers (Temporary Control of Export) Bill, the text of which was issued last week, and the object of which is to control temporarily the exportation of certain fertilisers. The Bill provides that the export of any of the fertilisers specified in the schedule may be prohibited by Order in Council.

From Week to Week

THE manufacture of oxygen and of dyes is among the new industries recently started in Cuba.

Synthetic dyes are being manufactured at Selby by the SELBY CHEMICAL CO., which is establishing large works, now nearing completion.

MR. H. E. WRIGHT, of Middlesbrough, read a paper on "The Chemical and Thermal Conditions in Blast Furnace Practice" before the Iron and Steel Institute, on Thursday, May 6.

MR. MACLAREN, formerly proprietor of the Stenton Iron Works, Wishaw, and afterwards the first chairman of the Scottish Iron and Steel Co. (Ltd.), died on Monday in Lanark after a brief illness.

DR. J. GEORGE ADAMI, Vice-Chancellor of the University of Liverpool, has been appointed to represent the Board of Education on the Governing Body of the Imperial College of Science and Technology, in place of Sir Richard Glazebrook, who has resigned.

IN connection with the development of the new chemical works at Billingham on Tees, Messrs. Brunner, Mond & Co. have purchased a number of large residences at Norton-on-Tees for their staff, and also a farm for the purposes of an extensive housing scheme for the workpeople.

At a conference in London on Wednesday, of representatives of the ALUMINIUM TRADES and the National Federation of General Workers it was decided to form a joint committee of employers and employed. In future if any dispute arises in the industry the committee will be summoned to deal with the matter.

A course of eight lectures on "The Biochemistry of Sterols" will be given by Mr. J. A. GARDNER in the Physiological Laboratory of London University, South Kensington, at 5 p.m. on Tuesdays, beginning on May 18. The lectures are intended for advanced students of the University and others interested in the subject. Admission is free, without ticket.

Following the discovery of Dr. J. O. Arnold of a highly efficient form of steel, a contract, it is announced, has been entered into between Mr. J. D. Moffat, of Sir T. Salter Pyne & Co., Ltd., consulting engineers, of Westminster, S.W., and Dr. Arnold. Steps are being taken to place the new steel on the market. The works producing it will be in Sheffield.

THE Broxburn, Oakbank, and Pumpherston Oil Companies and Young's Paraffin Light and Mineral Oil Company still retain their individuality, although they are all under the control of Scottish Oils, Ltd., which in its turn is controlled by the Anglo-Persian Oil Company. Broxburn has just declared a dividend of 12½ per cent., Oakbank 10 per cent., Pumpherston 30 per cent., and Young's 2½ per cent., in each case on the ordinary shares. The distributions for 1918-19 were:—Broxburn 15 per cent., free of tax, with share bonus of a like amount; Oakbank 15 per cent., Pumpherston 40 per cent., and Young's 12 per cent.

At Barnet, last week, Sir Ernest Shackleton gave evidence in a case in which Elstree Chemical Works, Ltd., of which he is a director, were summoned for permitting a nuisance at Elstree. One witness said that the smells from the factory were so bad that a gasworks was a scent bottle compared with them. Sir Ernest Shackleton said that everything possible was being done to abate the nuisance. A Solicitor: Is it a fact, Sir Ernest, that you are impervious to smells? Sir Ernest Shackleton: Having lived in the Antarctic, where there are no smells, I am the first to notice them here. The case was adjourned for three months.

In the Australian House of Representatives, on May 6, Mr. Hughes, the Prime Minister, in moving the second reading of the Bill approving the agreement between the Government and the Anglo-Persian Oil Co. to supply oil fuel at Australian ports, said that Australia's output in shale oil was negligible, but that he firmly believed that flowing oil would be found in Australia or her dependencies. Under the agreement, the Anglo-Persian Oil Co. will form a refining undertaking with a capital of £500,000 in £1 shares, the Commonwealth taking up £250,000 worth of the stock, and also undertaking to protect the company by fiscal measures against dumping and unfair competition.

In reply to Mr. Bromfield, who asked in Parliament on Wednesday, whether the Bolsheviks had captured nearly 2,000,000 tons of petroleum and its by-products in the Baku region, Mr. Kellaway said no official report had been received as to the quantities of petroleum involved, but as the Bolsheviks were in possession of Baku, it might be assumed that the whole of the stocks in and near the town had fallen into their hands. The latest information as to these stocks was dated March 1, when the total quantity of crude oil and products in the oilfields and refinery districts was estimated to be over 4,000,000 tons.

At Vickers House, Broadway, Westminster, on Thursday morning, an interesting film showing a centrifugal separator manufactured by Centrifugal Separators, Ltd. (8, Idlesleigh House, Caxton Street), was exhibited and attracted much interest. The film was taken at Barrow for the Department of Overseas Trade, in connection with the Dominions Touring Exhibition. The company's re-designed Vickers-built machines are now being despatched, and, although several have been sent abroad and are being erected, the first to be running in this country is a 36 in. machine installed at the works of the International Paint & Compositions Co., Ltd., Felling-on-Tyne.

It is estimated that there are about 120,000,000 tons of HIGH-GRADE MANGANESE ore in the States of Matto Grosso, in Brazil, with an average percentage of 45·6 pure manganese metal, although in some cases the percentage is as high as 58 or 59 per cent. The chief deposits are situated in two hills, the Morro de Urucum and the Morro Grande, not far from Corumba on the west side of the Paraguay river, and are worked by the Companhia Minas e Viacao de Matto Grosso, a mining and shipping company with headquarters in Rio de Janeiro, which has been granted concessionary rights for 70 years, dating from 1918, over an area of 25,000 acres. It is being financed largely by British and American capitalists. At present, a *Times* correspondent states, about 10,000 tons of ore has been extracted, and is being held pending the completion of the new railway to the river port of Ledario near Corumba. When their plans have matured the company hopes to produce up to 150,000 tons of ore per annum.

The next informal meeting of the CHEMICAL SOCIETY will be held at Burlington House on Thursday, May 20, after the conclusion of the formal business of the ordinary scientific meeting. An exhibit demonstrating the methods of controlling soil organisms now being investigated at the Rothamsted Experimental Station will be shown by Mr. and Mrs. D. J. Matthews. This exhibit will include specimens of the soil organisms and the cultivation of these on artificial media. The effect of toxic substances on organisms and of the relationship of chemical composition to toxicity, with specimens illustrating effective doses of certain typical substances with a given quantity of soil, will also be shown. Dr. Marie Stopes will exhibit specimens and microscopic slides of fusian, durain, clarain and vitrain, the four main constituents of banded bituminous coal. Mr. E. R. Thomas will show some experiments illustrating the influence of temperature, concentration, solvent, constitution and catalyst on the rate of chemical change.

MR. JOHN SAXE, the U.S.A. Consular agent at Punta Arenas, Costa Rica, gives an interesting account in the United States Commerce reports of how PURPLE DYE is obtained from shell fish. "On the Pacific coast of Costa Rica," he writes, "especially in the region about Cocos Bay, there abounds a kind of shell fish called the 'nacacool,' from which a fine purple colour is obtained. So far no way has been found for preserving this dye, and the industry has remained in the hands of the few old people who take the trouble to dye a few ounces of thread every summer. The process is very simple. On picking up the shell from the beach or detaching it from a boulder the gatherer blows her breath into it, whereupon a few drops of a greenish liquor ooze out. This liquor is collected in a clamshell, and, after a sufficient quantity has been collected, the thread is passed through it, soon after assuming, on exposure to the sunlight, a beautiful purple colour, which is absolutely fast after it has turned purple. It is thought possible that the dye turns fast only on exposure to the air, and that the liquor could be preserved by keeping the air away from it. There is little doubt that this industry of dyeing thread could be extended to greater proportions if an extensive demand at good prices could be found for the dyestuff."

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STEEL. Heating Martin furnaces with a mixture of blast-furnace and coke-oven gases. A. Schneider. *Stahl u. Eisen*, April 15, 501-510.
VARNISHES. Review of the progress of raw materials, adjuncts, and substitutes used in the manufacture of varnishes and lacquers, and of progress in making varnishes, &c., in 1919. Utz. *Farben-Zeit.*, April 24, 1311-1312. This instalment deals with solvents and diluents. (See also *Chem. Age*, 1920, 411, 508.)
WATER. Purification of boiler feed water with substitutes for soda. C. Braungard. *Chem.-Zeit.*, May 1, 334-335.

Miscellaneous

- ANALYSIS.** The estimation of uranium. R. Schwarz. *Helv. Chim. Acta*, May 1, 330-346. The separation of uranium from iron and chromium is also dealt with.
ANALYSIS. A reaction for nitrites. P. H. Hermans. *Pharm. Weehblad.*, April 24, 462-463.
COPPER SULPHATE. The possibility of manufacturing copper sulphate from chalcopyrite containing 10 per cent. of copper. E. V. Zappi. *Anal. Soc. Quim., Argentina*, November-December, 1919, 433-439.
ELECTROLYSIS. Contributions to the study of the phenomena of electrolytic migration. Electrolysis of mixed solutions of alkali salts. M. H. van Laer. *Rec. Trav. Chim., Pays-Bas*, April 15, 301-329.
EVAPORATORS. Concentrators used in chemical industry. H. Molinari. *Givern. Chim. Ind.*, February, 60-73. The author deals with multiple-effect evaporators, condensers, &c.
EXPLOSIVES. The acidity of smokeless powders. A. Angeli and G. F. Errani. *Gazz. Chim. Ital.*, Feb., 139-148.
HYDROGEN PEROXIDE. The constitution of hydrogen peroxide. A. Rius. *Helv. Chim. Acta*, May 1, 347-365.
NITROUS ACID. The stabilisation of nitrous acid in view of reactions in which it is used. Application to diazotisation. E. Briner and R. Jonas. *Helv. Chim. Acta*, May 1, 366-369.
WOOD. The development of the wood carbonising industry. K. Kietabli. *Oesterr. Chem. Zeit.*, April 15, 49-51.

Patent Literature

We publish each week a list of selected complete specifications accepted as and when they are actually printed and on sale. In addition, we give abstracts within a week of the specifications being obtainable. Readers can thus decide what specifications are of sufficient interest to warrant purchase, the only way of obtaining complete information. A list of International Convention specifications open to inspection before acceptance is added, and abstracts are given as soon as possible.

Abstracts of Complete Specifications

- 117,083. GASIFICATION OF CARBONIFEROUS SUBSTANCES. H. Strache, 15, Theobaldgasse, Vienna. International Convention date (Austria), June 28, 1916.

A distillation chamber is superposed on a producer and air is blown through to raise the carbonaceous material to incandescence and partly distil the material in the upper chamber. During the subsequent "run" superheated steam is blown in at the bottom of the producer and also at the junction between the producer and distillation chamber. The distillation gas and water gas may be combined or may be collected separately and an increased yield of ammonia is obtained.

- 122,192. CATALYSTS SUITABLE FOR USE IN HYDROGENATION PROCESSES. W. P. Schuck, 801, East Seventeenth Street, Portland, Ore., U.S.A. International Convention date (U.S.A.), January 9, 1918.

A solution of nickel nitrate is mixed with a reducing agent, such as cane sugar, and then run into a muffle heated to 550°C.—650°C. Carbon dioxide is also passed into the muffle and the product, which contains free carbon, is allowed to cool in the muffle, which contains carbon dioxide mixed with nitrogen liberated by the reaction. The catalyst may be used for the hydrogenation of fatty oils at low temperatures (150°C.) and at atmospheric pressure.

- 123,719. HYDROCARBONS, RECTIFICATION OF. Bataafsche Petroleum-Maatschappij, 30, Carel Van Bylandtlaan, and S. H. C. de Brey, 102, Statenlaan, The Hague, Holland. International Convention date (Holland), March 1, 1918. Addition to 123,522, February 21, 1918.

Hydrocarbons such as casing-head gases and gases from the distillation of crude petroleum and bituminous shale are rectified according to No. 123,522 (see THE CHEMICAL AGE, Vol. I., page 672) at 20 atmospheres pressure and a temperature of 40°C.—150°C. to separate the constituents. It is now found that a pressure of 5 atmospheres and a temperature of 5°C.—80°C. may be used. Preliminary heating may be employed, as in the earlier patent.

- 133,012. MONO-AZO DYESTUFFS, MANUFACTURE AND PRODUCTION OF. Farbenfabriken vorm. Friedr. Bayer & Co., Leverkusen, near Cologne. International Convention Date (Germany), July 25, 1916.

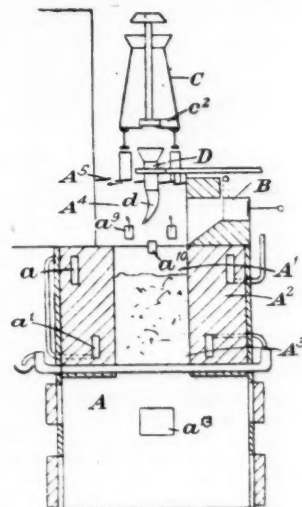
Diazotized 5-nitro-2-aminobenzene-1-carboxylic acid amides, in which the two hydrogen atoms of the amide group are replaced by alkyl-, aryl-, or aralkyl groups, are combined in acid solution with sulphonic acids of beta naphthylamine or its substitution products other than the 2-aryl- or 2-alkylamino-8-naphthol-6-sulphonic acids. In one example, 271 parts of 5-nitro-2-aminobenzene-1-carboxylic acid methyl-anilide having a melting point of 183°C.—184°C. are diazotized, and the diazo compound is combined with 237 parts of 2-methylaminonaphthalene-7-sulphonic acid in the presence of sodium acetate. The dye is then salted out and treated as usual. Examples of other compounds are also given. The resulting dyes produce red to violet shades on wool.

- 140,955. DINITROPHENOL, MANUFACTURE OF. O. Silberrad, Buckhurst Hill, Essex. Application date, July 10, 1919.

It is found that the yield of 50 parts of dinitrophenol from 100 parts of phenol obtained by the usual method of manufacture may be increased to 130 parts of dinitrophenol per 100 parts of phenol by first converting the phenol into para-nitrosophenol and then nitrating the latter. A solution of 200 parts of sodium nitrate in 350 parts of water is mixed with 100 parts of para-nitrosophenol and the mixture run into 480 parts of 50 per cent. sulphuric acid heated to 70°C.—80°C. The mixture is heated to 95°C. for 6 hours, allowed to cool, and the dinitrophenol filtered off. The sodium nitrate and sulphuric acid may be replaced by nitric acid.

- 141,089. FURNACES FOR THE PRODUCTION OF MINERAL DISTILLATES OF DEFINITE COMPOSITION. W. J. Fadden, c/o Messrs. Martin & Co., 18-19, Ironmonger Lane, London, E.C. Application date, October 7, 1918.

The furnace is more particularly for the production of mineral distillates, such as zinc white or lead sulphate for use as a pigment. The furnace *A* is divided into three zones *A*¹, *A*², *A*³, the upper and lower zones being cooled by water circulated through channels *a*, *a'*. Coke is fed by the device *B* into the furnace, and when it becomes incandescent the mineral is fed from the hopper *C* by means of a spiral blade *c*¹, and a distributing blade *d*, which spreads it evenly on the top of the coke charge. The mineral is volatilised in the middle zone *A*² and the vapour is carried upwards in a flame of carbon monoxide. The vapour is oxidised by streams of air which enter through the



141,089

openings *a*⁹, *a*¹⁰ and through the slits in the roof *A*⁵. Air for combustion is admitted through the inlet *a*¹³, which is controlled by a damper. The progress of the oxidation of the mineral in the space *A*⁴ is observed through the openings *a*⁹ by means of a spectroscope, the disappearance of the metallic lines indicating that the oxidation is complete. The oxidised particles are carried into a preliminary cooling chamber and then into a series of main cooling chambers separated by vertical partitions where the material is deposited. The gases then pass into a filter containing a number of filter bags in which the fume is deposited and from which it is ultimately removed and conveyed away. The draught through the cooling chambers and filters, and the air for oxidation, are all controlled from a single position at the furnace itself, so that the conditions may readily be kept constant by a spectroscopic observation of the flame in the space *A*⁴.

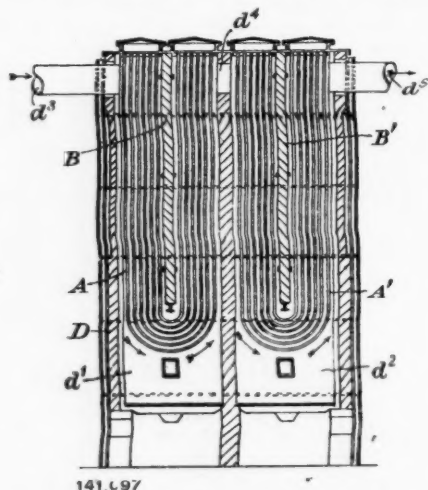
- 141,093. SULPHATE OF AMMONIA PRODUCTION OF, FROM DISTILLATION AND LIKE GASES CONTAINING AMMONIA. E. C. R. Marks, London. (From Société Franco-Belge de Fours à Coke, 100-101, Avenue de la Toison d'Or, Brussels, Belgium. Application date, November 28, 1918.

Gas from distilling or coking ovens is cooled to 20°C.—25°C. to condense tarry matter and water vapour. The condensed ammoniacal liquor is treated in a still in the usual way, and the gas is then passed through a rectifier from which hot ammoniacal gas is obtained at a temperature of 90°C.—100°C. free from moisture. This gas is mixed with the oven gas and passed

into a closed saturator containing a solution of ammonium sulphate and sulphuric acid of 33° – 34° Bé, having 7 per cent. of free sulphuric acid, and at a temperature of 25°C .– 40°C . Crystals of sulphate of ammonia are thus obtained without the necessity of heating the saturator by means of steam coils.

- 141,097. COOLING GASES, APPARATUS FOR. J. A. Reavell, 28, Oakwood Avenue, Beckenham, Kent, and Kestner Evaporator & Engineering Co., Ltd., 37, Parliament Street, London, S.W. 1. Application date, December 4, 1918.

Two sets of U-tubes A and A' are fixed to headers in a casing D , which is divided into two compartments d^1 and d^2 by a vertical partition extending nearly to the top. The two compartments contain baffle plates B , B' , extending down-



141,097

wards into the U-tubes, and cooling liquid is circulated through the tubes. The gas to be cooled enters by the pipe d^3 , and is deflected downwards over the U-tubes, under the baffle B , and then upwards over the tubes to the opening d^4 into the next compartment through which it passes in a similar manner to the outlet d^5 . In this construction dust does not accumulate on the tubes and on the headers as in the construction in which the tubes are inverted U-tubes attached to headers at the bottom.

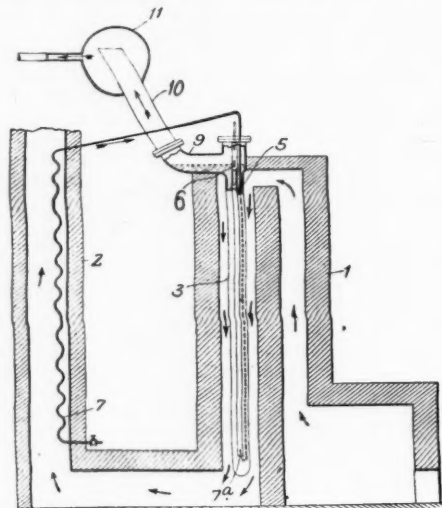
- 141,172. REVIVIFYING SPENT OXIDE. W. J. Dibdin, 31, Idmiston Road, West Norwood, London, S.E. 27. Application date, March 15, 1919.

Spent oxide is spread on trays having fine wire gauze bottoms which are then stacked in a chamber through which superheated low-pressure steam at a temperature of about 500°C . is passed. The steam carries off the greater part of the sulphur and volatile organic matter in the spent oxide, and the sulphur is condensed out. The trays are then transferred to another chamber to which air is admitted, and oxidation starts spontaneously. The oxidation continues at a rate controlled by regulating the admission of air, so that the spent oxide is not heated to a temperature which renders it inactive as a purifying agent. Any sulphur dioxide contained in the burnt gases is recovered in a sulphuric acid plant.

- 141,223. HYDROCARBONS, METHOD OF AND APPARATUS FOR TREATING, FOR THE PRODUCTION OF LIGHTER HYDROCARBONS. B. Andrews, 715, Main Street, Houston, Texas, and W. C. Averill, jun., 723, Main Street, Houston, Texas, U.S.A. Application date, May 27, 1919.

A furnace 1 is provided with a smoke stack 2, and a vertical tube 3 closed at the bottom projects downwards into the furnace flue. An inner tube 5 projects downwards into the tube 3, and is provided with openings 6 near the top, while the lower end is also open. The outer tube 3 contains molten lead, which also partly fills the elbow pipe 9. The oil to be treated is passed through a pipe 7 in the form of a coil in the smoke stack 2, where it is pre-heated, and then passes through a tube which extends downwards through the molten lead,

and has its lower end 7a turned up so as to discharge the pre-heated oil into the lower end of the tube 5. The tube 3 is preferably about 10 feet long, so that the pressure at the bottom against which the oil is delivered is over 50 lb. per square inch. The vapour and lead circulate upwards through the openings 6, and the vapour then separates and passes through the pipe 10 to the settling drum 11, while the lead returns downwards through the tube 3. The rapid circulation of the lead prevents any deposition of carbon on the walls of the tubes. The temperature and pressure of cracking are varied with the



141,223

particular oil treated, and a large yield of light volatile oil is obtained. Another modification is described, in which the heated oil is injected into the bottom of one limb of a U-tube, so that the lead circulates upwards through this limb into a header, and downwards through the other limb of the U-tube. The cracked vapour passes to a dephlegmator or air-cooled condenser, where heavy oils and water are removed, and the lighter vapour then passes to a water-cooled condenser, where it is liquefied.

- 141,272. SULPHUR BEARING HYDROCARBONS, PROCESS FOR DESULPHURISING. Hall Motor Fuel, Ltd., and T. A. McCrea, Pinners' Hall, Austin Friars, London, E.C. 2. Application date, September 8, 1919.

A hydrocarbon such as petroleum distillate is vaporised, and passed through a chamber containing bauxite, porous clay, or the like, heated to 150°C .– 300°C . A number of such chambers are connected in series, and are heated by superheated steam or hot air passed through surrounding jackets. The sulphur compounds are absorbed by the bauxite, and it is found that a spirit containing 0.1 per cent. may have its sulphur content reduced to 0.03 per cent. Reference is directed, in pursuance of section 7, sub-section 4, of the Patents and Designs Act, 1907, to Specifications Nos. 7,282 of 1914 and 109,077.

- 141,290. COPPER FROM LYES RESULTING FROM THE TREATMENT OF CUPRIFEROUS PYRITES, PROCESS FOR OBTAINING. H. P. Soulié-Cottineau, 4, rue Jouffroy, Paris. Application date, October 31, 1919.

The process is for obtaining copper in an agglomerated form from the lyes obtained from pyrites by means of a modification of the cementation process, in which copper is deposited from its solution by means of metallic iron. The object is to produce on a large scale the copper scale, which is formed in small quantities when the lye is passed through channels containing waste iron. The lye is poured in streams over iron scrap contained in a wicker basket with the object of obtaining a depolarising effect on the copper-iron couple. The same result may be obtained by a violent agitation of a cupriferos solution in which iron is placed. When about half the copper content has been deposited as a thin film on the iron, the

copper-coated iron is placed in a cupriferous solution (which may be that remaining from the first part of the process), and the film is allowed to increase in thickness by a further deposition of copper. The copper film may be detached as a whole, and is found to contain 98—99 per cent. of copper.

141,305. **ELECTROLYSERS.** G. G. Hepburn, 52, Newport Road, Chorlton-cum-Hardy, Manchester. Application date, February 22, 1919.

Mono- and bi-polar electrode electrolyzers of the press type used for the electrolysis of brine are difficult to construct with liquid and gas tight joints. This difficulty is avoided by immersing the whole electrolyser in a tank containing paraffin wax, carnauba wax, pitch, naphthalene or like non-conductor of electricity. The substance is melted to immerse the electrolyser in it, but is solid at the working temperature. Alternatively, a liquid insulator such as glycerine may be used.

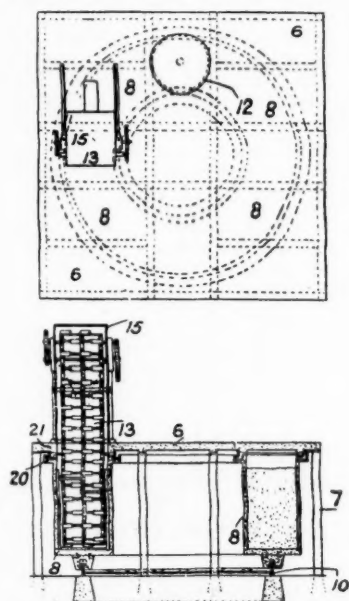
International Specifications Not yet Accepted

139,753. **PERBORATES, FREDRIKSSTAD ELEKTROKEMISKE FABRIKER AKTIESELSKABET, F.E.F., Fredriksstad, Norway.** International Convention date, March 4, 1919.

A solution containing 40 parts of borax, 100 parts of sodium carbonate and 7 parts of sodium perborate is electrolysed until the amount of perborate is increased to 12 parts, and 60 parts of sodium peroxide per litre are then added. A further quantity of perborate is thus produced, and precipitation is assisted; the bicarbonate in the solution is re-converted into carbonate, and a further quantity of borax is added. The solution is then electrolysed again.

139,803. **SUPERPHOSPHATE MANUFACTURE.** Chemical Construction Co., Charlotte, N.C., U.S.A. (Assignees of R. E. Forbis, Charlotte, N.C., U.S.A.). International Convention date, March 4, 1919.

The object is to produce superphosphate by a continuous process. The mixture of ground phosphate rock and sulphuric acid is fed from a mechanical mixer, which is mounted on the cover 6, but is not shown, into an annular den 8, which



139 803

rotates on a vertical axis. The mixture is carried round three-quarters of the circumference by the slow rotation of the den, and is then ready for removal by the excavator 13. The casing 15 of the excavator is supported by the cover 6, which rests on the supports 7, 8. The cover is made gastight by means of liquid seals formed by the circular flanges 21, which dip into annular troughs 20 containing tar or the like. The super-

phosphate is raised by the excavator 13 to an elevator or conveyer, the outlet being sealed by the material against escape of gas. The gas may be drawn off by a fan.

140,041. **MOTOR SPIRIT.** Dayton Metal Products Co., Taylor Street, Dayton, Ohio, U.S.A. (Assignees of C. F. Kettering, Ridgeley Terrace, and T. Midgley, 127, North Ludlow Street, both in Dayton, Ohio, U.S.A.) International Convention date, March 10, 1919.

A substance containing NH_2 groups, or which gives off nitrogen during combustion, or alternatively, ethyl iodide, aniline oil, or iodine, is added in the proportion of 3—5 per cent. to gasoline or kerosene motor spirit. The motor spirit is thereby rendered suitable for engines using high compression.

140,051. **PHTHALIC ANHYDRIDE.** H. Sasa, 331, Tabata, Tokyo, Japan. International Convention date, March 7, 1919.

Nitronaphthalene is treated with sulphuric acid in the presence of iron or zinc to produce phthalic anhydride.

LATEST NOTIFICATIONS.

142,448. Substantive ortho-oxy-azo-dyestuffs, copper compounds thereof, and their application in dyeing. Ges. für Chemische Industrie in Basel. May 1, 1919.

142,462. Roller crushing machines. Union Espagnole de Fabriques d'Engrais de Produits Chimiques et de Superphosphates. March 9, 1914.

142,477. Condensing gases and gaseous acids, Method of— and apparatus therefor. G. Nauerz. April 30, 1919.

142,480. Sugar and furfural from wood and other cellulose containing substances, Manufacture of. A. Classen. March 18, 1919.

142,493. Lixiviating granular or pulverulent material. G. Grondal. April 29, 1919.

142,507. Paraffin wax, Treatment of—for the production of oxygenated and other compounds. A. Schmidt. January 15, 1916.

142,512-3. Refractory and insulating products, Process for the manufacture of. G. L. Dimitri and J. E. Delaunay. November 21, 1916, and July 16, 1918.

Specifications Accepted, with Date of Application

122,829. Aluminium Nitride, Process for Producing. Armour Fertiliser Works. January 28, 1918.

133,014. Refractory Articles, Manufacture of. Carborundum Co. September 27, 1918.

141,401. Mordant-dyeing diazo-dyestuffs, and their application in dyeing and printing. O. Imray. (Society of Chemical Industry.) December 10, 1918.

141,403. Furnaces. H. Fuller and R. A. Bedford. December 12, 1918.

141,412. Caoutchouc and caoutchouc-like substances, Process of vulcanising natural and artificial. L. Gaisman and J. L. Rosenbaum. January 10, 1919.

141,417. Wood, woody fibre and similar carbonaceous substances, Destructive distillation of. P. Poore. January 11, 1919.

141,440. Colourless organic compounds, Manufacture of. South Metropolitan Gas Co., and H. Stanier. January 18, 1919.

141,505. Destructive distillation, Process of. O. F. Stafford. April 14, 1919.

141,572. Gas works, Purifiers employed in. R. & J. Dempster and G. F. H. Beard. June 30, 1919.

141,643. Mono-azo-dyestuffs, Manufacture of. O. Imray. (Society of Chemical Industry.) December 10, 1918.

At a meeting of the AMALGAMATED SOCIETY OF DYERS, BLEACHERS, FINISHERS AND KINDRED TRADES, held at Bradford, on Saturday, May 8, a resolution to institute a 48-hour week in the dyeing trade was unanimously passed. A Macclesfield delegate, in supporting the resolution, remarked that, while numbers of their men were out of work and drawing unemployment pay, there were other members who were working 70 and 80 hours per week. The executive will now have power to prevent any of their members from working more than 48 hours a week, and it is hoped that the unemployed men will be able to obtain work in future.

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co. and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

Market Report

WEDNESDAY, May 12.

Trade during the current week has been on the whole satisfactory, although here and there may be detected slight signs of a slackening off in the demand, but on the other hand the demand has improved for several products.

Supplies of materials for prompt delivery are still somewhat difficult to obtain and stocks are extremely light. Export business has improved and there are again signs of activity in the demand for many heavy products. The recent slump in Japan appears to have passed the worst and the resumption of demand from that market in the near future is not unlikely.

General Chemicals

ACETONE is becoming scarce, and the price is extremely firm.

ACID ACETIC is without change on the week, but is scarce on the spot and higher prices are asked by producers for forward delivery.

ACID CARBOLIC is without change and prices are well maintained.

ACID CITRIC is without change.

ACID FORMIC is firmer and there is a good demand both on home and export account.

ACID LACTIC is lifeless and very little new business is passing.

ACID OXALIC continues scarce, but price is without change.

ACID TARTARIC.—A number of parcels that were recently on the market appear now to have been absorbed and the position shows a distinctly firmer tendency.

AMMONIUM SALTS are without any change at the moment, and prices are all well maintained and supplies comparatively scarce.

ARSENIC.—This is a quietly steady market.

BARIUM SALTS continue brisk and there is a good demand for carbonate and chloride.

BLEACHING POWDER is nominally without change and is practically unobtainable on export account.

CALCIUM ACETATE has been much more active, and good business has been done at prevailing figures.

COPPER SULPHATE is without feature, and the market is lifeless.

FORMALDEHYDE is only in moderate request, and the price is maintained.

IRON SULPHATE (Green Copperas) is moving off steadily without change in figure.

LEAD SALTS are inclined to be slightly firmer, and an increase in the demand for Acetate is to be noted.

LITHOPONE has been somewhat more freely offered, but good business is passing.

MAGNESIUM SALTS are active and there has been a good demand for Sulphate.

POTASSIUM BICHROMATE.—There is nothing fresh to report, and the product remains as scarce as ever.

POTASSIUM CARBONATE is in better request and the available stocks are being rapidly absorbed.

NITRATE OF POTASH is in excellent request.

POTASSIUM PERMANGANATE is scarce on the spot for B. P. material, and holders are inclined to raise their idea of price.

POTASSIUM PRUSSATE is the turn higher and stocks are now extremely light, with very few foreign arrivals.

SODIUM ACETATE is slow of sale and the price a shade easier.

SODIUM CAUSTIC is in better request on export account, but there is no appreciable change in price.

SODIUM HYPOSULPHITE is now practically unobtainable, and the market is quite a nominal one.

SODIUM NITRITE.—There have been one or two recent arrivals, but all these have been immediately absorbed and the price is as firm as ever.

SODIUM PHOSPHATE is moving off well at the last quoted figures.

SODIUM PRUSSATE is unchanged in value, with supplies in slightly better demand.

SODIUM SULPHIDE is becoming almost impossible, and the recent remarkable level reached on this product has been well maintained.

TIN SALTS.—There is nothing fresh to report.

ZINC SALTS are quiet, but there has been a slightly better demand for solid chloride.

Coal Tar Intermediates

Some quite good business has been transacted in this section and the volume of trade that could be done is only limited by the scarcity of spot supplies while makers are becoming more chary every day to enter into former commitments.

ALPHANAPHTHALAMINE is very firm, and in extremely short supply.

ANILINE SALT AND OIL.—Aniline salts continue in request at the last quoted figure.

BETA NAPHTHOL.—There is no apparent relief from the present stringency on this material, and it looks as though higher levels will still be reached.

DIMETHYLANILINE is wanted, but there is practically nothing obtainable.

DIPHENYLAMINE is in very short supply and any parcels becoming available are eagerly snapped up at full figures.

NAPHTHIONIC ACID is very scarce, and makers are inclined to restrict their sales.

PARANITRANILINE continues in request, but very little business can be concluded owing to the scarcity of supplies.

RESORCIN.—A certain amount of business has been done in the commercial article, but supplies are extremely light.

SALICYLIC ACID has only been moderately active, and there is no change in price.

Coal Tar Products

There is practically no change to report.

90's BENZOL is still worth about 2s. 8d. on rails.

CREOSOTE OIL remains unchanged at 1s. 1d. in the North, with 1s. 2d. to 1s. 2½d. in the South.

SOLVENT NAPHTHA is worth 2s. 9d. per gallon.

HEAVY NAPHTHA.—The price is about 3s. 3d. to 3s. 6d. per gallon.

NAPHTHALENE is still scarce, crude being worth from £18 to £20, with refined from £36 to £40 per ton.

PITCH.—The market is firm, but business with France and Belgium is somewhat restricted owing to the high rate of the exchange.

Sulphate of Ammonia

The position remains quite unchanged.

Current Prices

Chemicals

	per	£	s	d.	to	£	s	d.
Acetic anhydride	lb.	0	3	6	to	0	3	9
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	120	0	0	to	125	0	0
Acid, Acetic, glacial, 99-100%	ton	120	0	0	to	122	10	0
Acetic, 80% pure	ton	97	0	0	to	98	10	0
Arsenic	ton	109	0	0	to	105	0	0
Boric, cryst.	ton	74	10	0	to	76	0	0
Carbolic, cryst. 39-40%	lb.	0	1	3	to	0	1	3½
Citric	lb.	0	7	0	to	0	7	3
Formic, 80%	ton	120	0	0	to	125	0	0
Gallic, pure	lb.	0	7	3	to	0	7	9
Hydrofluoric	lb.	0	0	7	to	0	0	8

	per	£	s.	d.		£	s.	d.
Acid, Lactic, 50 vol.....	ton	63	0	0	to	67	0	0
Lactic, 60 vol.....	ton	78	0	0	to	83	0	0
Nitric, 80 Tw.....	ton	41	0	0	to	44	0	0
Oxalic	lb.	0	2	11	to	0	3	0
Phosphoric, 1.5	ton	65	0	0	to	67	0	0
Pyrogallic, cryst	lb.	0	11	6	to	0	11	9
Salicylic, Technical	lb.	0	2	10	to	0	3	6
Salicylic, B.P.	lb.	0	3	8	to	0	3	10
Sulphuric, 92-93%.....	ton	8	0	0	to	8	10	0
Tannic, commercial	lb.	0	5	0	to	0	5	3
Tartaric	lb.	0	4	0	to	0	4	2
Alum, lump.....	ton	19	10	0	to	20	0	0
Alum, chrome.....	ton	93	0	0	to	95	0	0
Alumino ferric	ton	9	0	0	to	9	10	0
Aluminium, sulphate, 14-15%.....	ton	17	10	0	to	18	10	0
Aluminium, sulphate, 17-18%.....	ton	20	10	0	to	21	10	0
Ammonia, anhydrous.....	lb.	0	1	9	to	0	2	0
Ammonia, .880.....	ton	32	10	0	to	37	10	0
Ammonia, .920.....	ton	20	0	0	to	24	0	0
Ammonia, carbonate.....	lb.	0	0	7½	to	—	—	—
Ammonia, chloride.....	ton	115	0	0	to	120	0	0
Ammonia, muriate (galvanisers) ...	ton	60	0	0	to	65	0	0
Ammonia, nitrate	ton	60	0	0	to	65	0	0
Ammonia, phosphate	ton	130	0	0	to	135	0	0
Ammonia, sulphocyanide	lb.	0	2	3	to	0	2	6
Amyl, acetate.....	ton	360	0	0	to	370	0	0
Arsenic, white, powdered	ton	67	10	0	to	70	0	0
Barium, carbonate.....	ton	13	10	0	to	14	10	0
Barium, carbonate, 92-94%.....	ton	14	10	0	to	15	0	0
Chlorate.....	lb.	0	1	4	to	0	1	5
Chloride.....	ton	36	0	0	to	37	0	0
Barium, Nitrate.....	ton	55	0	0	to	56	0	0
Sulphate, blanc fixe, dry.....	ton	25	10	0	to	26	0	0
Sulphate, blanc fixe, pulp.....	ton	15	10	0	to	16	0	0
Bleaching powder, 35-37%	ton	18	10	0	to	19	10	0
Borax crystals	ton	41	0	0	to	42	10	0
Calcium acetate, Brown.....	ton	20	0	0	to	21	0	0
" Grey.....	ton	35	0	0	to	37	10	0
Carbide.....	ton	30	0	0	to	32	0	0
Chloride.....	ton	9	10	0	to	10	10	0
Carbon bisulphide.....	ton	58	0	0	to	59	0	0
Casein, technical	ton	80	0	0	to	83	0	0
Cerium oxalate.....	lb.	0	3	9	to	0	4	0
Chromium acetate	lb.	0	1	2	to	0	1	4
Cobalt acetate	lb.	0	7	3	to	0	7	6
Oxide, black	lb.	0	7	9	to	0	8	0
Copper chloride	lb.	0	1	3	to	0	1	6
Sulphate	ton	46	0	0	to	47	0	0
Cream Tartar, 98-100%.....	ton	300	0	0	to	305	0	0
Epsom salts (<i>see</i> Magnesium sulphate)								
Formaldehyde 40% vol.....	ton	345	0	0	to	350	0	0
Formosol (Rongalite)	lb.	0	4	0	to	0	4	3
Glauber salts	ton	Nominal.						
Glycerine, crude.....	ton	70	0	0	to	72	10	0
Hydrogen peroxide, 12 vols.	gal.	0	2	8	to	0	2	9
Iron perchloride	ton	50	0	0	to	52	0	0
Iron sulphate (Copperas)	ton	4	15	0	to	5	0	0
Lead acetate, white	ton	95	0	0	to	97	10	0
Carbonate (White Lead).....	ton	75	0	0	to	77	10	0
Nitrate.....	ton	72	0	0	to	75	0	0
Litharge	ton	62	10	0	to	65	0	0
Lithopone, 30%	ton	60	0	0	to	62	0	0
Magnesium chloride	ton	15	10	0	to	16	10	0
Carbonate, light.....	cwt	2	15	0	to	3	0	0
Sulphate (Epsom salts commercial)	ton	14	0	0	to	14	10	0
Sulphate (Druggists')	ton	18	10	0	to	19	10	0
Manganese, Borate.....	ton	190	0	0	to	—	—	—
Sulphate	ton	105	0	0	to	110	0	0
Methyl acetone.....	ton	95	0	0	to	100	0	0
Alcohol, 1% acetone	gall.	Nominal.						
Nickel ammonium sulphate, single salt	ton	50	0	0	to	52	10	0
Potassium bichromate	lb.	0	2	2	to	0	2	3
Potassium Carbonate, 90%	ton	102	0	0	to	105	0	0
Chloride.....	ton	Nominal.						
Chlorate.....	lb.	0	0	10	to	0	0	10½
Meta-bisulphite, 50-52%	ton	270	0	0	to	280	0	0
Nitrate, refined	ton	72	0	0	to	75	0	0
Permanganate	lb.	0	6	3	to	0	6	6
Prussiate, red	lb.	0	6	3	to	0	6	6
Prussiate, yellow.....	lb.	0	2	4	to	0	2	5
Sulphate, 90%	ton	31	0	0	to	33	0	0
Salammoniac, firsts	cwt.	5	15	0	to	—	—	—
Seconds	cwt.	6	0	0	to	—	—	—
Sodium acetate	ton	63	0	0	to	65	0	0
Arsenate, 45%	ton	60	0	0	to	62	0	0
Bicarbonate	ton	10	10	0	to	11	0	0

	per	£	s.	d.		£	s.	d.
Sodium, Bichromate	lb.	0	2	0	to	0	2	1
Bisulphite, 60-62%	ton	47	10	0	to	50	0	0
Chlorate	lb.	0	0	5½	to	0	0	6½
Caustic, 70%	ton	43	10	0	to	44	10	0
Caustic, 76%	ton	44	10	0	to	45	10	0
Hydrosulphite, powder, 85%	lb.	0	3	9	to	0	4	0
Hyposulphite, commercial	ton	35	0	0	to	40	0	0
Nitrite, 96-98%	ton	120	0	0	to	125	0	0
Phosphate, crystal	ton	40	0	0	to	42	0	0
Perborate	lb.	0	2	2	to	0	2	4
Prussiate	lb.	0	1	10	to	0	1	10½
Sulphide, crystals	ton	30	0	0	to	32	0	0
Sulphide, solid, 60-62%	ton	55	0	0	to	57	0	0
Sulphite, cryst.	ton	14	10	0	to	15	10	0
Strontium carbonate	ton	85	0	0	to	90	0	0
Nitrate	ton	90	0	0	to	95	0	0
Sulphate, white	ton	8	10	0	to	10	0	0
Sulphur chloride	ton	42	0	0	to	44	10	0
Sulphur, Flowers	ton	24	0	0	to	26	0	0
Roll	ton	24	0	0	to	26	0	0
Tartar emetic	lb.	0	3	5	to	0	3	6
Tin perchloride, 33%	lb.	0	2	6	to	0	2	7
Perchloride, solid	lb.	0	3	0	to	0	3	3
Protochloride (tin crystals)	lb	0	1	11	to	0	2	0
Zinc chloride, 102 Tw.	ton	22	0	0	to	23	10	0
Chloride, solid, 96-98%	ton	60	0	0	to	65	0	0
Oxide, 99%	ton	82	10	0	to	85	0	0
Oxide, 94-95%	ton	70	0	0	to	72	10	0
Dust, 90%	ton	90	0	0	to	92	10	0
Sulphate	ton	21	10	0	to	23	10	0

Coal Tar Intermediates, &c.

	per	£	s.	d.		£	s.	d.
Alphanaphthol, crude	lb.	0	4	0	to	0	4	3
Alphanaphthol, refined	lb.	0	5	0	to	0	5	3
Alphanaphthylamine	lb.	0	4	0	to	0	4	3
Aniline oil, drums extra	lb.	0	1	5	to	0	1	6
Aniline salts	lb.	0	1	10	to	0	2	0
Anthracene, 85-90%	lb.	—	—	—	to	—	—	—
Benzaldehyde (free of chlorine).....	lb.	0	5	6	to	0	6	0
Benzidine, base	lb.	0	12	6	to	0	13	6
Benzidine, sulphate	lb.	0	10	0	to	0	11	0
Benzoic acid	lb.	0	5	6	to	0	6	0
Benzoate of soda	lb.	0	5	6	to	0	6	0
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate.....	lb.	1	6	0	to	1	7	6
Betanaphthol	lb.	0	5	3	to	0	5	6
Betanaphthylamine, technical.....	lb.	0	8	6	to	0	9	6
Croceine Acid, 100% basis	lb.	0	5	0	to	0	6	3
Dichlorobenzol	lb.	0	0	6	to	0	0	7
Diethylaniline	lb.	0	7	9	to	0	8	6
Dinitrobenzol	lb.	0	1	5	to	0	1	6
Dinitrochlorobenzol	lb.	0	1	5	to	0	1	6
Dinitronaphthaline	lb.	0	1	4	to	0	1	6
Dinitrotoluol	lb.	0	1	8	to	0	1	9
Dinitrophenol	lb.	0	3	6	to	0	3	9
Dimethylaniline	lb.	0	5	0	to	0	5	3
Diphenylamine.....	lb.	0	5	0	to	0	5	3
H-Acid.....	lb.	0	14	0	to	0	14	6
Metaphenylenediamine	lb.	0	5	9	to	0	6	0
Monochlorobenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	7	6	to	0	8	6
Monosulphonic Acid (2:7).....	lb.	0	7	6	to	0	8	0
Naphthionic acid, crude	lb.	0	5	6	to	0	6	0
Naphthionate of Soda.....	lb.	0	6	0	to	0	6	6
Naphthylamin-di-sulphonic-acid...	lb.	0	5	6	to	0	6	6
Nitronaphthaline	lb.	0	1	3	to	0	1	4
Nitrotoluol	lb.	0	1	4	to	0	1	6
Orthoamidophenol, base.....	lb.	0	18	0	to	1	0	0
Orthodichlorobenzol	lb.	0	1	2	to	0	1	4
Orthotolidine	lb.	0	2	6	to	0	2	9
Orthonitrotoluol	lb.	0	1	7	to	0	1	8
Para-amidophenol, base	lb.	0	15	0	to	0	16	0
Para-amidophenol, hydrochlor	lb.	0	15	6	to	0	16	0
Paradichlorobenzol	lb.	0	0	6	to	0	0	8
Paranitraniline	lb.	0	8	3	to	0	8	9
Paranitrophenol	lb.	0	2	6	to	0	2	9
Paranitrotoluol	lb.	0	5	3	to	0	5	6
Paraphenylenediamine, distilled ...	lb.	0	13	6	to	0	14	6
Paratolidine	lb.	0	7	6	to	0	8	6
Phthalic anhydride.....	lb.	0	5	6	to	0	6	0
R. Salt, 100% basis	lb.	0	4	0	to	0	4	2
Resorcin, technical	lb.	0	11	6	to	0	12	6
Resorcin, pure	lb.	0	17	6	to	1	0	0
Salol	lb.	0	5	9	to	0	6	0
Shaeffer acid, 100% basis.....	lb.	0	3	6	to	0	3	0
Sulphanilic acid, crude	lb.	0	1	5	to	0	1	6
Tolidine, base	lb.	0	10	6	to	0	11	6
Tolidine, mixture	lb.	0	3	0	to	0	3	6

Condition of the Nitrate Market

Question of Duty Payment

HENRY BATH & SONS, LTD., in their monthly report on nitrate of soda, dated May 10, state: "Since last report of April 7 the market has been throughout in a state of expectancy that the various meetings announced as being held by the association in Valparaiso would lead to the settlement of some definite policy for dealing with fresh sales. At one time a new scale of selling prices from now on to March delivery f.a.s. Chile was believed to have been practically fixed, and it was also hoped that the difficulties in the way of arranging the sale of a big block of nitrate to one or more large exporters, to which reference has been previously made, would not prove insuperable. Unfortunately there is not yet any outward evidence of a practical result from all these deliberations, and the effect on prices of such long-deferred hope has been a fall of 9d. to 1s. per quintal. It is probable that the difficulty of negotiating a big sale has been enhanced by the contingency of the association dissolving automatically in January, should the German producers still not have joined and made up the total number of adherents to the minimum of 90 per cent. which is required for the prolongation of the association beyond an initial period of two years, and it is reported that further efforts are now being made to secure the adhesion of these producers.

"Meantime second-hand nitrate has amply sufficed to implement such a restricted market as in these circumstances could be expected. Transactions have been comparatively few, and in the earlier part of the period under review comprised April-May shipment at 16s. 1½d. to 15s. 10d. per quintal f.a.s. and July-December shipment at 16s. Subsequently 15s. 8d., 15s. 6d., and finally 15s. was touched for early shipment, 15s. 6d. for July-December, and 15s. 8d. for September-December, these last prices being the nearest quotations at the close. January-December, 1921, shipment has changed hands in the past month at 14s. 9d. and 14s. 6d., and 1921-1922 combined at 14s. 4d. down to 13s. 6d. The only cargo business has been in new season shipment at the parity of about 24s. per cwt., basis U.K. Bordeaux-Hamburg range.

"Demand from European consumers has lately been unsatisfactory, due in great measure to the very weak condition of foreign exchanges and the resultant high cost of importation. Even further afield, in such places as the United States and Japan, the latest reports are disappointing, and Japan is offering nitrate for re-export out of her excessive stocks. The United States Congress, moreover, has passed a law authorising the War Department to distribute on loan to farmers up to 100,000 tons out of the war stock of 300,000 tons still held in reserve, the ostensible object having been to anticipate an expected delay in arrivals, and although it seems uncertain that this policy will be put into actual operation, the suggestion of it is enough to exercise a deterrent effect on that market generally.

"Production last month was 197,900 tons, of which the somewhat large proportion of over 40,000 tons was manufactured by producers outside the Association. The total number of oficinas working was 98, compared with 84 in February last. There has been very little nitrate chartering in the last few weeks. One fixture for June loading was made at 130s. U.K. direct, and some end of April space was fixed at 120s., liner terms. The present quotations for U.K./Bordeaux-Hamburg appears to be about 130s. for loading in the next few months, and nominally about 150s. to 240s. for later."

The arrival of nitrate of soda for the fortnight ended May 10 amounted to 36,000 tons, and about 25,000 tons are due during the next fortnight. Continental markets, state Thomson, Aikman, Junior, continue dull and inactive, with the demand from consumers on a small scale, especially in France and Belgium, and it is evident that the rise in price necessitated by the reduced value of the franc will result in a smaller consumption in these countries than had been generally forecasted.

The Chilean Government have announced alterations in the method of payment of the duty involving a gradual reduction in the amount actually payable in gold. From August onwards the proportions of gold, currency and drafts will be as follows: 30 per cent. gold, 30 per cent. currency, 40 per cent. drafts. The total supply of nitrate in sight at April 30 amounts to 1,867,500 tons, which compares with 1,213,000 tons in 1914.

The quantity loading on May 1 last is cabled as 39,000 tons to Europe, 22,000 tons to the United States, and 1,000 tons to Japan and other countries.

Aguas Blancas Nitrate

Some time ago a Valparaiso firm asked for an option to purchase the assets and liabilities, including the trading results, of the Aguas Blancas Nitrate Co. for a sum of £625,000 in cash. This option was to be exercised or terminated by May 8, and, if it were not exercised, Mitrovitch Hermanos, the firm in question, were liable to forfeit £3,000 in cash. The secretary of the Aguas Blancas Nitrate Co. now announces that Mitrovitch Hermanos have reluctantly decided, owing to the economic position in Chili, not to exercise their option, and, in accordance with its terms, have paid to the company the fine of £3,000. The 5s. shares of the Aguas Blancas Co. were dealt in early in the year at just over 20s., and rose during the recent activity in nitrate shares to 46s. 9d., but they changed hands to-day at 32s. 6d. on its becoming known that the proposed purchase was not to be consummated.

Hydrogenation of Naphthalenes

At the ninth and last meeting of the session of the Manchester Section of the Society of Chemical Industry, held at the Grand Hotel, Manchester, on Friday, May 7 (Mr. J. Allan presiding), Mr. F. M. Rowe, head of the Research Laboratory for Colouring Matters at the Manchester College of Technology, read a paper under the above title.

The work of Bamberger and his collaborators on the reducing action of sodium and an alcohol resulted in the preparation of numerous hydro-derivatives of naphthalene, which had attracted the attention of subsequent investigators from time to time. As a result it had been shown that ar-tetrahydro-alpha-naphthylamine possessed many interesting properties which might well render this base and its derivatives useful intermediate products to the manufacturers of dyes, if the production of the base on a technical scale were economically possible.

Mr. Rowe stated that he had been engaged upon a study of the course of the reduction by which tetra-hydronaphthalene and ar-tetrahydro-alpha-naphthylamine were formed from naphthalene and alpha-naphthylamine respectively. It was now clear that, so far as the reaction with sodium and an alcohol was concerned, a similar series of reactions occurred in each case. First, a dihydro derivative was formed, in which the additional hydrogen atoms occupied the para position with respect to one another, and this was converted into a dihydro derivative, in which the additional hydrogen atoms occupied the ortho position with respect to one another, by the action sodium alcoholate, prior to the further reduction to the tetrahydro compound. The intermediate dihydro-alpha-naphthylamines had been isolated and their constitution determined.

The formation of hydrogenated derivatives of naphthalene by the action of a hydrogen in the presence of a catalyst was discussed, and attention drawn to the fact that tetra-hydronaphthalene and dekahydronaphthalene, which were valuable solvents and motor fuels, were now available in Germany in large quantities, being manufactured by the direct hydrogenation of naphthalene. The author described the results of preliminary experiments on this subject.

A discussion followed, in which Messrs. Allan, Pyman, Baddiley, Grounds, Callan, Morton, Sinnatt, Henderson, Sylvester and Radcliffe took part.

Answers to Inquiries

AMMONIUM PHOSPHATE.—This material is used in the manufacture of sugar (Lagrange process) and in the impregnation of matches. It is also employed extensively in America as a fertilizer.

SODIUM SILICOFLOURIDE (Na_2SiF_6).—Sodium silicofluoride is a by-product of the Kestner process for making hydrofluoric acid. It is used in enamelling, and also to some extent in the manufacture of "milk" glass.

Company News

CASSEL CYANIDE CO.—At a meeting of the company, to be held on May 17, resolutions passed in April, increasing the capital from £200,000 to £600,000, will come up for confirmation.

DORMAN, LONG & Co.—For the half-year to March 31 last the directors announce an interim dividend of 4 per cent., free of tax, payable June 16 to holders of ordinary shares, registered May 17, also a dividend at the rate of 8 per cent. per annum, less tax, payable June 30, to holders of preferred ordinary shares registered June 9.

NATIONAL DRUG & CHEMICAL.—The report for the year to January 31 last states that, after paying all trade expenses, salaries to directors and officers, providing for bad debts, and paying dividends on preference shares, a balance of \$124,168 is left, equal to £25,514. The profit and loss account shows the trading profit for the year, after making provision for war taxation, was \$289,081, equal to £59,400.

CHERSONESE (F.M.S.) ESTATES.—At the tenth annual meeting of this company, held in London last week, Mr. Noel Trotter (the chairman), who presided, said that in 1919 the estates made a record profit of £67,840, and more than one third of the total earnings of the estate had been obtained from the coconut business, and a steady revenue was to be expected from this source in future. A dividend of 20 per cent. was declared.

JURGENS, LTD.—The net profits for the year ended December 31 amount to £222,040, to which is added £34,534 brought forward, making a total of £250,574, from which is deducted £36,054 for dividend paid in February last of 7 per cent. on the £1,000,000 preference shares issued in May, £86,345 the balance of issue expenses, and £68,765 for a dividend of 7 per cent. on the ordinary shares, leaving a balance of £68,813 to be carried forward, subject to excess profits duty.

NEW BRUNSWICK GAS & OILFIELDS.—The report for the period from August 1, 1918, to December 31, 1919, shows a gross profit of £40,773, and a net profit of £18,670. £25,922 was brought in, making £44,922. After putting £15,236 to the general depreciation fund, £29,356 remains to be carried forward. A dividend of £10. 6s. 8d. per cent. on the preference shares will complete payment of the cumulative preferential dividend to December 31, 1919, including arrears, and the directors accordingly recommend its payment, less tax, also a dividend of 5 per cent., less tax, on the ordinary shares, leaving to be carried forward £17,811.

FORTH GLASS WORKS, LTD.—This company invites applications for an issue at par of 45,000 shares of £1 each. The directors and their friends will apply for 20,000 shares, payable in cash at par. The company has been formed to acquire and extend the business of A. M. Allan & Co., glass manufacturers, Forth Glass Works, Firhill, Glasgow, and to carry on the business of glass and bottle manufacturers. At present the business principally consists of manufacturing tumblers, ships' deck lights, pavement lights and household glass ware. The prospectus states that the works are well situated on the north bank of the Forth and Clyde Canal, by which they have transport facilities. The vendor is accepting £19,491 in cash and 12,000 £1 shares as payment of the purchase price. The share capital is £60,000 in £1 shares. The subscription list will be closed on or before Wednesday next.

WOLFRAM MINING & SMELTING.—The accounts of the Wolfram Mining & Smelting Co. for the year ended September 30, 1919, show a loss of £5,654, after allowing for depreciation. The directors state that immediately following the armistice the price of wolfram dropped from approximately 55s. per unit to 30s. per unit, which made it impossible for any Wolfram property to continue working at a profit. No settlement has been arrived at with regard to the company's claim against the Ministry of Munitions. The directors offered to submit the case to arbitration, but no reply has been given to this proposal. Milling was suspended in June for the reorganisation of the plant. Development of the mine has continued, and it is intended to continue opening up the mine until the new mill is completed. Mine development has yielded satisfactory results, and a good supply of ore should be available for treatment when the mill is ready.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

London Gazette

Order Made on Application for Discharge

SCOTT, WILLIAM ROBERT, residing and trading at 139, Denton Street, Carlisle, chemist. Discharge suspended for three months. Bankrupt to be discharged as from July 9, 1920. Date of Order, April 9, 1920.

Liquidators' Notices

MANCHESTER COAL TAR PRODUCTS CO., LTD. (in liquidation).—A general meeting of members will be held at 58, Coleman Street, London, E.C.2, on Tuesday, June 15 at 11 a.m. E. I. Husey, Liquidator.

LONDON & MAIKOP OIL CORPORATION, LTD. (in liquidation).—Creditors' claims on or before June 18 to the liquidator, A. E. Cave, Sun Court, 67, Cornhill, London, E.C.3.

MEXICAN GRAPHITE CO., LTD.—A general meeting will be held at the offices of Orford, Patterson & Peet, Chartered Accountants, 111, Exchange Buildings, Liverpool, on June 11, at 2.15 p.m. H. A. Patterson, Liquidator.

SELECTED COPPERFIELDS, LTD.—A general meeting of members will be held at the offices of the Liquidator, Pinner's Hall, Austin Friars, London, E.C., on Monday, June 14, at 12 noon. F. H. W. Hope, Liquidator.

Companies Winding Up Voluntarily

THE VULCAN IRON & METAL WORKS, LTD. (in voluntary liquidation).—A general meeting of members will be held at the offices of Beckingsale, Greenwood, Tucker & Cross, Solicitors, 34, Copthall Avenue, London, E.C., on Friday, June 18, at 5 p.m. S. J. Roberts, Liquidator.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, created after July 1, 1908, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges which would, if created after July 1, 1908, require registration. The following Mortgages and Charges have been so registered. In each case the total debt, as specified, in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced since such date.]

PREMIER FILM PRINTING & CHEMICAL CO., LTD., LEAMINGTON.—Registered April 29, £2,500 mortgage, to F. J. Whitlock, 9, Bank Street, Rugby, and another; charged on land and premises, Upper Grove Street, Leamington, known as Somerset Mews, with fixtures of every sort and kind.

Satisfactions

KENT PORTLAND CEMENT WORKS, LTD., LONDON, E.C.—Satisfaction registered May 3, £350,000, registered January 31, 1920.

WASHINGTON CHEMICAL CO., LTD., WASHINGTON (DURHAM).—Satisfactions registered April 29, for £3,900, balance of £4,000, registered October 19, 1901; £8,900, balance of amount outstanding July 1, 1908; and £12,000, registered January 23, 1911.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

HILL, GILBERT, 319, King's Road, Chelsea, chemist. £19. 15s. 6d. March 10.

Benn Brothers Journals

Some Features of the Current Issues

AERONAUTICS.

"Cost of Airship Ton-Miles"; "Landing—run and take-off of Aeroplanes," by J. Klemm; "Loads and Stresses on Aeroplanes," by J. Case.

THE CABINET MAKER.

"Tripod Tables"; "Interior Decoration by Robert Adam"; "Patents: Recent Specifications applying to Furniture Trades."

THE ELECTRICIAN.

"Costing," by R. Townsend (concluded); "Automatic Protective Devices for Alternating-Current System," by A. E. McColl; and "Water Power Development in Canada."

THE FRUIT-GROWER.

Food Ministry and the Outlook; "Tasting Day at National Cider Institute"; and "A New Rotary Cultivator."

THE GAS WORLD.

"Gas Engine Design"; "Power from Low-Grade Gas" and all the gas news of the week.

THE HARDWARE TRADE JOURNAL.

The Ironmongers' Federation at York; Annual Meeting of the Iron and Steel Institute; "Labour Saving in the Foundry (IX.), by Joseph Horner.

WAYS AND MEANS.

"The American Attitude," by Sir George Paish; "Commercial Aspects of Aviation," by Major P. L. Holmes; and "Housing: The Need for Incentive," by Alan E. Munby.

W. P. THOMPSON, F.C.S., M.I.Mech.E.

G. C. DYMOND, M.I.Mech.E.

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